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Assure DQ

Layouts Guide

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Introduction

This guide is your starting point to define and use layouts within your Assure DQ implementation.

Who Should Use This Guide?

This guide is intended for the person who maps the data from an input source for use in Assure DQ. This person is typically a controls developer (also known as a rules writer).

What's Covered in This Guide?

This *Assure DQ Layouts Guide* provides general information about layouts and includes the procedures to define each layout type.

The table below describes what is in each chapter:

Chapter	Contents
Chapter 2, "Getting Started with Layouts"	The definition and purpose of layouts and an overview of the layout types.
Chapter 3, "Fixed Layouts"	Information and instructions to define a fixed layout.
Chapter 4, "Delimited Layouts"	Information and instructions to define a delimited layout.
Chapter 5, "XML Layouts"	Information and instructions to define an XML layout.
Chapter 6, "Database Layouts"	Information and instructions to define a database layout.
Chapter 7, "Microsoft Excel Layouts"	Information and instructions to define a Microsoft® Excel® layout.
Chapter 8, "ISO 8583 Layouts"	Information and instructions to define an ISO 8583 layout.
Chapter 9, "Java Object Layouts"	Information and instructions to define a Java® Object layout.
Chapter 10, "OLAP Layouts"	Information and instructions to define an OLAP layout.

Chapter	Contents
Chapter 12, "Web Service Layouts"	Information and instructions to define a Web Service layout.
Chapter 13, "Maintaining and Testing Layouts"	Information and instructions on tasks that can be performed on any layout type.

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Getting Started with Layouts

Assure DQ measures the integrity of the data in your business. The data comes to Assure DQ from various input sources. A layout specifies the location and physical organization of an input data source, as well as the positions and types of data within that source.

About Layouts

You must define a layout for any data source or external translation table before you set up the control point that will use it. After you define a layout, you can select it for use by any control point.

You must have a layout for each input source that you plan to use as a source for control data. The type of input source determines the type of layout to use.

The layout is strictly a map to the input data. Additional extract instructions are necessary to instruct Assure DQ to identify specific data within the input source.

Layouts are one of the reusable elements in Assure DQ. If you use a particular input source to provide the data for more than one control entity or data quality application, you can reuse the layout, provided that you have mapped all the data fields needed for each control.

You can override most layout properties for individual control points. See the online Help for information about control point overrides to layouts.

Types of Layouts

The type of layout that you use depends on the format of the input source. Assure DQ uses the following types of layouts:

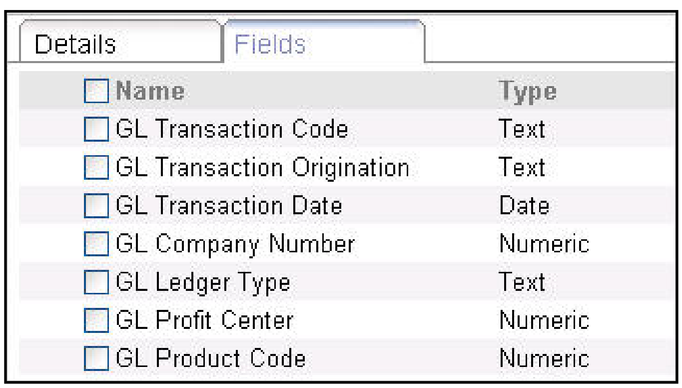
- Fixed file layouts map to data in files with fixed-length data fields or variable-length records that contain fixed-length positional fields. PDF reports are supported as an input source and require a fixed layout.
- Delimited file layouts map to data in files or other data streams that use a single character, such as a comma, to delimit data fields.
- XML layouts map to data in a file that uses XML tags to delimit groups and fields.

- Database layouts map to database table columns using a direct JDBC™ connection or a JNDI name that identifies the JDBC connection JDBC-compliant relational database.
- Microsoft Excel layouts map to data in a Microsoft Excel spreadsheet.
- ISO 8583 layouts map financial transaction data defined by ISO 8583 standards.

Note	The ISO 8583 layout is available only if you are licensed for this feature.

- Java Object layouts map to data based on a Java class file or serialized object.
- OLAP layouts define data that resides in a multi-dimensional format database. For example, you might use OLAP technology to access data that resides in an SAP Business Information Warehouse.
- Web Service layouts define data at a Web service endpoint that the Assure DQ server can access.

The graphic below shows the definition of a layout for a fixed length record file with seven fields. These fields are mixed types of Text, Date, and Numeric. Once extracted from the input source, the data is available for use in controls and reports.



Rules ▸ Layouts ▸ New Layout ▸ *Layout type* ▸ Fields tab

Determining the Layout Type to Use

You must build a layout to represent each data source that feeds into your business process. To determine the types of layouts needed, begin with an analysis of the data from your input sources.

Obtain a sample of each type of information that you will need and then answer the following questions for each information type:

- What is the source type? For example, is it a relational database or file?
- Does the source contain XML tags or attributes?
- Is the information within a file composed of multiple records or a single record?
- Does the information have an obvious structure or pattern?
- Is the information categorized? For example, is it broken down into separate lines or records?
- Is the length of each component fixed? That is, does each component take up the same amount of space?
- If the length is not fixed, is it delimited by a comma, semicolon, space, or other delimiter?
- Are there copybooks or database schemas that can help you map your data to the entity to which you plan to apply controls?

The answers to these questions will help you to determine the type of layout that you need. See “Types of Layouts” on page 9.

Analyzing the Data

Before you create the layout, examine the data to answer the following questions. This information will be helpful as you define the layout.

- What is the specific data that you want to capture? The layout does not need to represent each type of record and every single field. You are only required to represent the records from which you plan to capture data, and the fields in which that data resides.
- Compare the amount of data to capture against the total amount of data in the input source. If your control point uses most of the data, you may want to capture all the data to maximize reusability for this layout.
- How is the data formatted?
- Does the data file contain more than one type of logical record? For example, if the file contains claim information, does the file represent insurance claims for life, home owner’s, and accident?

Data Access Methods

When you create a layout, you specify the method that Assure DQ will use to access the data. Not all methods to access data are available or appropriate for all types of layouts. Use one of the following methods to access data:

- Character/Byte Stream I/O—Character or byte data accessed by standard Java input methods.
- Record I/O—IBM® or Micro Focus COBOL record-oriented input.
- Networked Character/Byte Stream I/O—Input stream character or byte data accessed via URLs with protocols such as ftp or http.
- API Data—Character or byte data supplied through an Application Program Interface (API).
- JMS Message Queue—Character or byte data supplied through a JMS Queue.
- External Source Managed—Data at a Web service endpoint or on an OLAP server.

Record Ending Options

When you create a layout, you specify how the individual records are physically defined in the file. Based on the layout type and the data access method selected, the following are some of the options available:

- Line Sequential—Records are detected by a new-line byte or new-line sequence of bytes.
- Fixed Length—Records are a standard number of bytes long.
- Record Delimiter—Records are separated in the file by a standard character, such as a comma.
- Layout Defined—Records vary in record type and can be variable or non-variable in length; a record type must be defined for each logical record type.
- Message—For JMS Message Queue access when each message is a single record.

When the data access method is Record I/O, the following record ending options are available:

- Native z/OS I/O—Files with native record-oriented sequential or VASM (virtual storage access method) z/OS data sets.

- RDW 2—Mainframe files, downloaded to Windows® or UNIX® platforms, with records that begin with two-byte RDWs (record descriptor words).
- RDW4—Mainframe files, downloaded to Windows or UNIX platforms, with records that begin with four-byte RDWs (record descriptor words).
- RDW 8—Mainframe files, downloaded to Windows or UNIX platforms, with blocks that begin with four-byte BDWs (block descriptor words), followed by records that begin with four-byte RDWs (record descriptor words).
- Micro Focus Variable Record—Micro Focus COBOL variable sequential files.

Tips for Reusing Layouts

You may want to use the same input data source for multiple controls. In this case, it can be helpful to reuse the same layout. If one control requires input from eight fields and another control requires input from ten fields within the same source file, it makes sense to reuse the same layout. However, if one control requires input from eight fields and another control requires input from 100 fields, the processing time needed to process 100 fields can negate the convenience of using the same layout.

To create a reusable a layout, analyze the input data to determine whether you may want to extract additional information at a later time or for other control point runs.

Choose a name that is generic enough to represent the layout for multiple uses. You can edit the description for an existing layout, but you cannot edit the name.

Layout Security

Access to layouts is determined by security profiles. Security profiles authorize users and groups to perform tasks such as viewing, editing, and exporting layouts.

When a new layout is created, the Assure DQ Default Profile is automatically assigned to the layout. Rules writers with security manager or security administrator privileges can select a different security profile to associate with the layout.

Users can view a list of all the layouts they are authorized to access based on the layout's security profile. It is possible for a user to create a new layout and then not be able to view it in the list of layouts after it is saved.

When a layout is imported with a control entity, the system checks the security profiles of the control entity and its associated rules, such as layouts. If a security profile with the same ID exists in the current system, the system assigns that profile to the control entity and rules. If the control entity and its rules refer to a profile ID that does not exist in the current system, or if any of the rules lack a security profile, the system alerts you that one or more profiles are missing and assigns the default security profile. After the import process, a security administrator can assign a different security profile.

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Fixed Layouts

Once you determine that your data file requires a fixed layout, you need to analyze the file further to complete the fixed layout for the data file. Some questions that you must answer are:

- Will Assure DQ access the data file directly from a mainframe?
- If the data is accessed directly from a mainframe, do the records in the file have a fixed or variable length? To help you analyze the fields and records in the data accurately, you can use a COBOL copybook, which defines the physical layout of the data.
- If the data is accessed from a location other than a mainframe, what method will be used to access the data?
- Do the records contain different types of information? For example, are there records indicating the beginning and ending of account information? See the example in “Record Types” on page 16.
- If there are errors when Assure DQ extracts the data, how do you want to handle the errors?

Fixed Length Records

If the data file has a fixed structure, all the records are the exact same length.

```
Fred    260001101101
George  291001101110
Mabel   260010000033
Alice   290100100111
Grace   271110110120
Arthur  250010101110
Mary    281000000032
Belinda 261110111113
```

In the above example, each record is exactly 20 characters in length and contains the following data:

1st field	PIC	X(8)	Name
2nd field	PIC	X(2)	Dept. Number
3rd field	PIC	X(10)	Account Number

Variable Length Records

If the data file has a variable structure, the maximum record length is stored in the file's directory entry Logical Record Length (LRECL). The actual length (number of bytes in the record) is stored at the beginning of each record. Variable length records are usually found when the data file contains different types of records. For example, a file with customer bank account information can contain the customer's personal information as well as information about his checking, savings, and loan accounts.

In the example below, each record contains the following data:

1st field	PIC	X(5)	Dept. Number
2nd field	PIC	X(1)	Pay Grade
3rd field	PIC	X(6)	Employee Name

```
12345AJim   John  Alice
23456BBob   Mark  Mary
34567CJudge Jury
45678AJack  Linda Ann   Nancy Sandy
```

In the example, each record is variable in length. The minimum record length is 12 and the maximum record length is 36. The number of employee names per record can occur one to five times, so a count field is also needed for each record specifying the number of employee names in that record.

Record Types

Some input files contain records that are composed of more than one type of information. For example, the input file could have a record that contains purchasing information for a particular day. A header record, purchasing records, and a trailer record would make up the records.

During processing, you want the system to consider all the information for a set of purchasing records and to be able to distinguish individual purchasing records. To do so, you must establish record types.

One record type is needed to represent each of the different types of information. Below is an example of an input file composed of more than one type of record:

```
HD20080107
DT1001JOHN      SMITH                        45.44101
DT1002MARY      JONES                       310.00101
DT1003SALLY     BROWN-DAVIS               5,324.56102
DT1004ROBERT    LEWIS                        29.52103
TR04    5,709.52
HD20080108
DT1001SEAN      PENN                         19.45101
TR01    19.45
HD20080109
DT1001JOHN      SMITH                        24.65101
DT1002MARY      JONES                     1,331.24101
DT1003SALLY     BROWN-DAVIS                 184.45102
DT1004ROBERT    LEWIS                        11.11103
DT1005GEORGE    THEROS                      112.23101
DT1006SUSAN     WEBER                       617.17103
TR06    2,280.85
HD20080110
DT1001SEAN      PENN                      2,583.23101
DT1002SALLY     BROWN-DAVIS                 928.43103
DT1003ROBERT    LEWIS                     1,228.45102
TR03    4,740.11
HD20080111
DT1004ROBERT    LEWIS                        25.43103
DT1005GEORGE    THEROS                      225.16101
DT1006SUSAN     WEBER                       717.67101
DT1001SEAN      PENN                        243.65101
TR04    1,211.91
```

In the example, each record has a fixed length of 80. You need to create a record type to define the header, another record type for the purchasing records, and a third record type for the trailer.

IBM and Micro Focus Data

Assure DQ can access data that is IBM® or Micro Focus COBOL record-oriented input. When the data access method is Record I/O, you must specify a one of the following record-ending options:

Native z/OS I/O—For files with native record-oriented sequential or VSAM (virtual storage access method) z/OS data sets.

RDW 2—For mainframe files, downloaded to Windows or UNIX platforms, with records that begin with two-byte RDWs (record descriptor words).

RDW4—For mainframe files, downloaded to Windows or UNIX platforms, with records that begin with four-byte RDWs (record descriptor words).

RDW 8—For mainframe files, downloaded to Windows or UNIX platforms, with blocks that begin with four-byte BDWs (block descriptor words), followed by records that begin with four-byte RDWs (record descriptor words).

Micro Focus Variable Record—For Micro Focus COBOL variable sequential files.

Field Types

Before you begin to build the layout, analyze the input data to determine the location and types of data. Depending on the options selected on the Details tab, a fixed layout can contain one or more of the following:

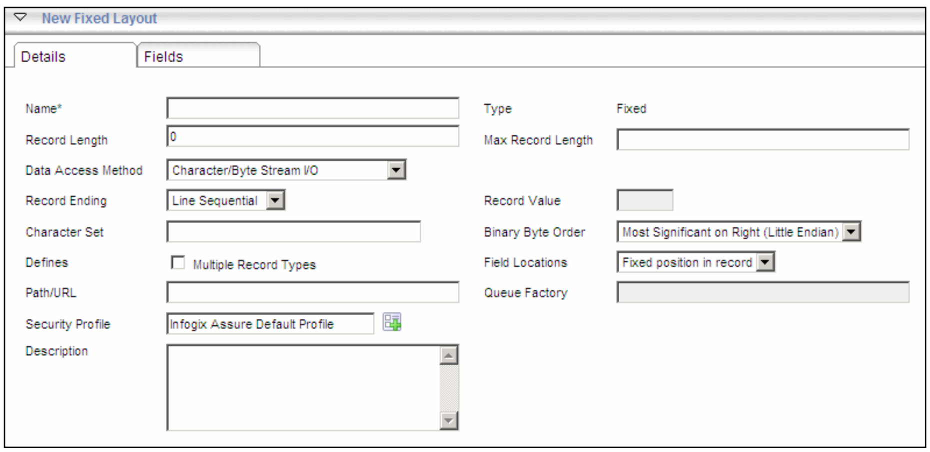
- **Field**—A field holds a single piece of information. You can capture as many fields in a record as you need. You may decide to only capture four fields, or you may decide to capture all the fields in the records. You can determine this after analyzing the input data. See “Add a Field” on page 23.
- **Group**—A fixed layout can contain repetitive fields. For these fields, you can define a group rather than defining each field separately. For example, auto insurance data might have a group named Driver and the fields in that group are related to the driver, such as name, address, city, state, ZIP code, driver’s license, and SSN. See “Add a Group” on page 32.
- **Record Type**—If the data in the input source is uniform in structure but represents more than one type of data, use record types to distinguish the different types of logical records. For example, an insurance company has a file with claim information about accident, home owner, and life insurance claims. A record type provides the ability to distinguish between the claim types. See “Add a Record Type” on page 34.
- **Sublayout**—Sublayouts define the structure of data according to another layout type (fixed, XML, delimited, ISO 8583, or Java Object) or another fixed layout. Sublayouts can also be used to define fields that occur multiple times in the input file to make it easier to extract the data. See “Add a Sublayout” on page 37.

Creating a Fixed Layout

After you analyze the data and determine what data to capture, you are ready to create a fixed layout.

To create a fixed layout, complete the following steps:

1. Click Rules > Layouts.
2. Click New Layout > Fixed.
   You can now complete the details and add fields for the layout in the New Fixed Layout pane.



Completing the Fixed Layout Details

1. Specify a Name to reflect the content and type of data source.

Tip	After the layout is saved, you cannot edit the layout name.

2. Specify the Record Length and Max Record Length by completing the record length fields:

Record Length Field	Value to Enter
Record Length	If the records are all the same length, specify the maximum record length in bytes. If the records vary in length, specify the minimum record length.
Max Record Length	If a minimum record length was specified in the Record Length field, specify the maximum record length.

3. Select a Data Access Method from the following options:

Data Access Method	Description
Character/Byte Stream I/O	Data is byte or character data accessed by standard Java input methods. This is the default data access method.
Record I/O	Data is IBM or Micro Focus COBOL record-oriented input.
Networked Character/Byte Stream I/O	Data is input stream byte or character data accessed via URLs with protocols such as ftp or http.
API Data	Data is byte or character data supplied through an Application Program Interface (API).
JMS Message Queue	Data is byte or character data supplied through a JMS queue.

4. Select a record ending option.

   For data access methods other than Record I/O, select one of the following Record Ending options based on how individual records are physically defined in the file:

Record Ending Option	Description
Line Sequential	Records are detected in the file by a new-line byte or new-line sequence of bytes. This is the default record ending option. Use the adjacent Record Value field to specify the maximum record length.
Fixed Length	Records are a standard number of bytes long. Use the adjacent Record Value field to specify the fixed length for all records.
Record Delimiter	Records are separated in the file by a standard character, such as a comma. Use the adjacent Record Value field to specify the character used to separate records in the file. To specify a hex value, enter 0x (zero x) and then the two letter hex value. For example, if the hex value is ff, enter 0xff.

Record Ending Option	Description
Layout Defined	Records vary in length and record type. Records with non-varying length can be layout defined (equivalent to selecting fixed length, record length). A record type must be defined for each logical record type.
Message	For JMS Message Queue access when each message is a single record.

For Record I/O data access method, select one of the following Record Ending options:

Record Ending Option	Description
Native z/OS I/O	Files with native record-oriented sequential or VSAM (virtual storage access method) z/OS data sets.
RDW 2	Mainframe files, downloaded to Windows or UNIX platforms, with records that begin with two-byte RDWs (record descriptor words).
RDW 4	Mainframe files, downloaded to Windows or UNIX platforms, with records that begin with four-byte RDWs (record descriptor words).
RDW 8	Mainframe files, downloaded to Windows or UNIX platforms, with blocks that begin with four-byte BDWs (block descriptor words) followed by records that begin with four-byte RDWs (record descriptor words).
Micro Focus Variable Record	Micro Focus COBOL variable sequential files.

5. If your data is from a different platform, the data may be encoded using a different character set than the platform on which Assure DQ is installed. To accommodate this situation, specify the conversion type in the Character Set field. If necessary, Assure DQ will convert the data to a compatible character set during control point execution.

   For example, suppose a Windows system produces your data source in the Cp1252 character set, but your Assure DQ server runs on a UNIX platform. You must specify that the character set of the data source is Cp1252.

6. The default Binary Byte Order is Most Significant on Right (little endian). Byte order depends on the computer processor that generates the data. Intel processors are generally little endian; most other processors are generally big endian (Most Significant on Left).

If you are not sure which binary byte order option to select, check with your system administrator to find out the type of computer that generated the input data.

7. If the file has more than one type of logical record, select the Defines Multiple Record Types check box. You can add multiple record types on the Fields tab when this option is selected. For more information on how to create a record type, see “Add a Record Type” on page 34.
8. Specify the Field Location from the following options:

Field Location Option	Description
Fixed position in record	Defines fields based on their position in the record, with position 1 as the first position. Select this option in the following situations: ■ You will use the “Express Define” option on the Fields tab to create a layout by highlighting field locations in the input file. ■ The description of the file is defined as fixed position in record. ■ You do not care about the physical structure of the file; you will pick the positions you care about. ■ You do not need to define groups of fields that occur multiple times. ■ It is unlikely that changes to the data will cause changes to the positions of the fields you will define.
Relative to prior field	Select this option in the following situations: ■ You need to define groups or fields that occur a variable number of times, as specified by an “occurs depending on” clause. ■ You need to define groups of fields with multiple occurrences. ■ You want to define a layout corresponding to a COBOL record description. ■ You expect frequent changes to the data.

9. Specify the Path/URL to access the input source, up to 500 characters.

   For Networked Character/Byte Stream I/O access, specify a URL. Use forward slashes, not backslashes, for compatibility with all platforms. Host address is acceptable in all cases instead of hostname. Use syntax similar to the following examples:

- ftp://hostname/filename or sftp://hostname/filename. To specify a user ID or password, select More > Network Credentials. Do not include network credentials in the URL. Some platforms require you to enclose the filename in single quotation marks. For specific guidelines, consult the documentation for your FTP server.
- http://hostname:port/filename. The file must be directly accessible by the host. It can't be in a subdirectory or on a different machine or partition.
- zip://zipfilepath/zipfilename.zip!filename.txt. This URL extracts a file located within a ZIP file.
- jar://jarfilepath/jarfilename.jar!filename.txt. This URL extracts a file located within a jar file.

JMS Message Queue access specifies the JNDI resource name that identifies the JMS queue.

10. If the Data Access Method selected is JMS Message Queue, specify the name of the Queue Factory, up to 500 characters. The Queue Connection Factory is a JNDI name that must be configured on the application server.
11. The system displays the Security Profile field only for a rules writer with security manager or security administrator authority. The security profile determines the permissions for this layout.

    If you have authority, you can specify the default security profile or a different profile.
12. Specify a Description of the file and the data you plan to capture.
13. Optionally, click Save to save the layout.

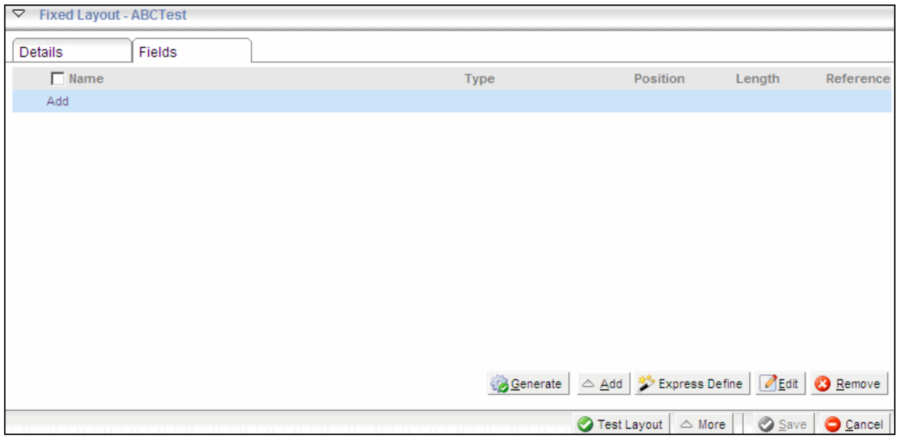
    You are now ready to specify the layout fields.

Add a Field

A field holds a single piece of information. You can add fields in the fixed layout to specify the locations and types of data that the input source contains.

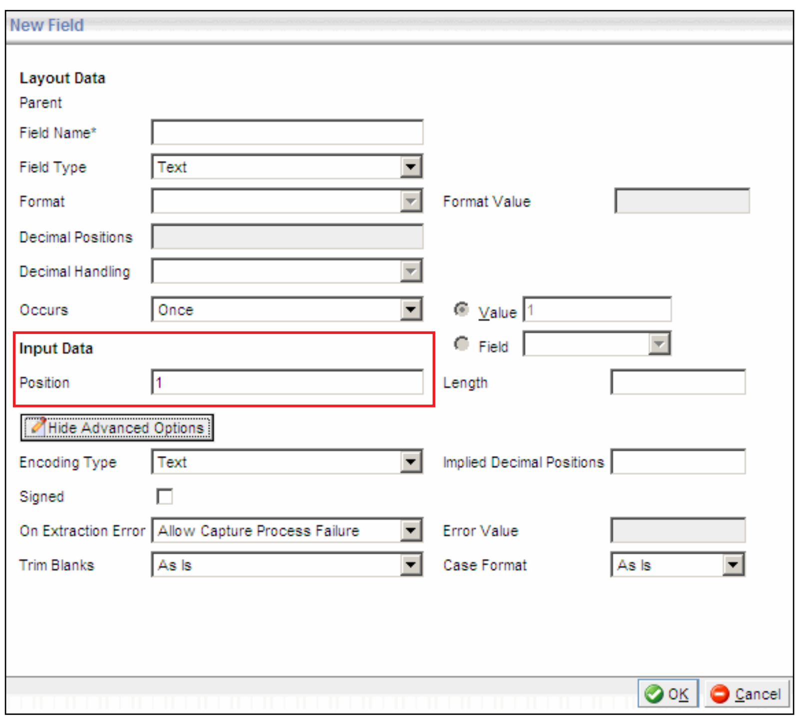
To add a field, complete the following steps:

1. In the Fixed Layout pane, click the Fields tab.

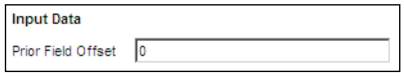


2. Select the location where you want to insert the field and click Add > Field. The system inserts the new field above the selected location. You can also double-click Add in the Fields list to insert a field above where you double-clicked.

   Complete the Layout and Input Data fields. Depending on the field type selected, not every field in the window needs to be completed.



If the Field Location selected on the Details tab is Relative to prior field, the first Input Data field is Prior Field Offset instead of Position.



Completing Layout Data Section

3. Specify the Field Name. The name can be a maximum of 40 characters and can contain letters, numbers, and underscores.
4. Select a Field Type from the following options:

Field Type	Description
Text	For fields containing characters or numbers not used in performing calculations.
Numeric	For fields containing numbers up to 15 digits. Big Numeric is the preferred selection for numeric fields, but in some situations, Numeric may be more efficient. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Big Numeric	For fields containing numbers. This is the preferred selection for numeric fields. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Date	For fields containing dates. Date separators are stripped out by the system during extraction.
Boolean	For fields representing true or false values.

5. Do one of the following:
   - If the field type selected in step 4 was Numeric or Big Numeric, continue to step 6.
   - If the field type selected in step 4 was Date, skip to step 7.
   - If the field type selected in step 4 was Text or Boolean, skip to step 11.

6. Select a Format for Numeric or Big Numeric from the following options:

Format Type	Description
Default	Select Default if the input data does not contain non-numeric characters other than a decimal point.
Lenient	Select Lenient to specify a locale, strip out non-numeric characters, or indicate that parentheses enclose negative numbers. For more information on how to enter a parsing pattern, see step 8.

7. Select a Format for Date from the following options:

Format Type	Description

ISO 8601	For date with a user–defined format (a date format other than ISO 8601 or YY/MM), enter a valid format.
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	`y` `Year`
	`M` `Month`
	`d` `Day of the month`
	`k` `Hour in day (1-24)`
	`H` `Hour in day (0-23)`
	`h` `Hour in am/pm (1-12)`
	`K` `Hour in am/pm (0-11)`
	`m` `Minute in hour`
	`s` `Second in minute`
	`D` `Day in year`
	Examples of user-defined date formats are:
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	Examples of user-defined time formats are:
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

Format Type	Description
YY/MM	Date is in the format YY/MM, where YY is the last two digits of the year and MM is the two digits representing the month. Examples of dates in this format are 07/01, 97/12, and 06/11.
User-Defined	Select if the date format contains formatting characters other than hyphens or colons (ISO 8601 compliant dates). See step 9 for more information on how to enter a user-defined format in the Format Value field.

8. Optionally, for Numeric, Big Numeric, or Date field types, specify a parsing pattern or locale in the adjacent Format Value field from the following options:

Format Value	Description
Numeric or Big Numeric with a lenient format	Enter p: followed by a parsing pattern. For example, if the input data contains negative numbers enclosed in parentheses and has four digits before the decimal and two digits after the decimal, the parsing pattern is P:0000.00;(#). Go to the Java Web site at http://java.sun.com/j2se/1.4.2/docs/api/java/text/DecimalFormat.html for valid parsing syntax.

Format Value	Description

User-defined date format	If the date field format is user-defined, specify a valid format.
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	`y    Year`
	`M    Month`
	`d    Day of the month`
	`k    Hour in day (1-24)`
	`H    Hour in day (0-23)`
	`h    Hour in am/pm (1-12)`
	`K    Hour in am/pm (0-11)`
	`m    Minute in hour`
	`s    Second in minute`
	`D    Day in year`
	Examples of user-defined date formats are:
	`yyyy/MM/dd    2007/11/25`
	`yyMMdd        071125`
	`yy/MM/dd      07/11/25`
	Examples of user-defined time formats are:
	`HH:mm:ss      06:05:30`
	`kk:mm         24:00`

9. For Numeric or Big Numeric field types, specify the number of Decimal Positions.
10. Specify Decimal Handling to round or truncate the input data to the number of decimal places specified in step 9.
    - Rounding Example—If the number of decimals selected is two, then the number 34.255 is rounded to 34.26.
    - Truncating Example—If the number of decimals selected is two, then the number 34.255 is truncated to 34.25.
11. Specify whether the field Occurs once or multiple times in the input file.

12. In the adjacent field, select one of the following options:

Occurrence Options	Description
Value	Select Value and then specify the maximum number of occurrences in the adjacent field.
Field	Select Field and specify the field that indicates the number of occurrences of this field in the adjacent drop-down list. The contents of the drop-down list are the other fields already defined in the layout.

Completing the Input Data Section

13. Complete the Position or Prior Field Offset field.
    - The Position field displays when Field Location on the Details tab is set to Fixed position in record.
    - The Prior Field Offset field displays when Field Location on the Details tab is set to Relative to prior field.

Options	Description
Position	Specify the starting location on the record of each field you want to extract. The first position on the record is position 1. On an eighty-character record, the last position is 80 with a length of 1.

Options	Description
Prior Field Offset	Specify where the field appears in the sequence of fields in the input file. Specify the position of the first character of the first field in the layout or sublayout. Valid values are 0–999999999. The default position is 0 (zero). This means that the first character of the field is also the first character of the layout or sublayout. If the first field does not begin in the first position, specify a positive number to indicate the start position in the layout. If the field is not the first field, and no overlaps exist, the Prior Field Offset is not needed. The subsequent fields are calculated based on the field length specified for the first field. For example, if Field 1 starts in position 1 for a length of 10, the system assumes the next field starts in position 11. If overlaps or gaps exist between the fields, use a positive or negative number to indicate the position of the first character of the current field relative to the last character of the previous field. A positive number indicates that the current field starts *n* characters after the last character of the previous field. For example, if Field 1 starts in position 10 through 20 and Field 2 starts in position 24 through 31, specify a field offset of 4. A negative number indicates that the current field overlaps the last *n* characters of the previous field. For example, if Field 1 starts in position 10 through 20 and Field 2 starts in position 18 through 25, to define Field 2, specify a field offset of -2.

14. Enter the Length of the field data (in bytes). Valid values are 0–999999999.

Advanced Options/Hide Advanced Options

The remaining Input Data fields are advanced options. Click Advanced Options to show the remaining fields. Click Hide Advanced Options to hide the remaining fields.

15. Select the Encoding Type from the following list of options:

Select	Description
Text	Field consisting solely of characters from a recognized character set, such as ASCII or Unicode.
Binary	Field consisting of a sequence of bytes intended to be interpreted as something other than text characters. A digit is usually represented by four bits, which represent the values, digits, or characters 0–9.
Packed Decimal	Field with two digits compressed into each byte (with the last half-byte reserved for the sign).
Display Numeric	Field stored in an uncompressed, displayable format. This is the default COBOL display numeric format.
Zoned Decimal	Field with each decimal digit stored in one byte with the lower four bits encoding the digit in binary-coded decimal form. Zoned decimal numeric representations are supported most notably by IBM mainframe systems.
Telephone Decimal	Telephone Binary Coded Decimal (TBCD) is an industry–specific format for telephone switch call data that is a packed value with no sign data.

16. The Implied Decimal Position field is optional and indicates the implied location of the decimal. This information applies only to text or numeric encoded data that does not physically contain a decimal character.

Always specify this for Display Numeric fields, unless there are no decimal positions.

17. For numeric fields in a COBOL file on an IBM mainframe, select the Signed check box if the field is a signed field.
A signed field is composed of regular Extended Binary Coded Decimal Interchange Code (EBCDIC) numeric characters, one character per byte, for all the digits of the field except the one that holds the sign, either the most-significant (sign leading) or the least-significant (sign trailing) digit. The digit that holds the sign combines with the sign of the number and the digit. A signed field saves one byte that the sign would otherwise occupy.

18. Use On Extraction Error to specify how the system will respond if the input data is missing or does not match the specified encoding type or format/pattern. Select a response from the following list of options:

Option	System Response
Allow Capture Process Failure	Stop processing and report a capture processing error.
Substitute Literal	Use an error value of your choice in place of the value that could not be captured.
Substitute Null	Use Null in place of the value that could not be captured.

19. Error Value is available if Substitute Literal was selected in the previous step. Specify a default value to use if an extraction error occurs. For a date field, enter a date in ISO format.
20. Trim Blanks is available if the specified field type selected is Text or Boolean. Specify if the leading and trailing blank characters should be truncated.
21. Case Format is available if the field type selected is Text. Specify how to convert the text of the case of the characters:

Select	Description
As Is	Does not convert the case of the text.
Lower	Converts the case of the text to all lower case.
Uppercase	Converts the case of the text to all upper case.

22. Click OK.

    The lower pane displays the Fixed Layout with the name and type of the field just added.
23. Repeat step 2 through step 22 to add another field.
24. Click Save after adding a field.

Add a Group

A fixed layout can contain fields that belong together. You can define a group for these fields and then add the fields to the group. You can also specify if the group occurs once or multiple times.

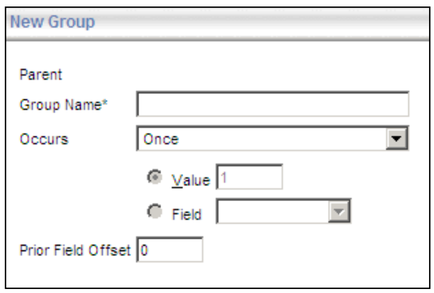
Groups and fields are defined in the same sequence as in the file.

To add a group, complete the following steps:

1. Create a fixed layout or select a fixed layout that already exists.
2. On the Details tab, Field Locations must be set to Relative to prior location for the Group option to be available.
3. Click the Fields tab.
4. Select the location where you want to insert the group and click Add > Group. The system inserts the new group above the selected location.

   You can also double-click Add in the Fields list to insert a group above where you double-clicked.

   Use the New Group page to create the new group.



5. Specify Group Name. This must be a unique name that has not been used for a field, group, record type, or sublayout in the current layout.
6. Specify whether the field Occurs once or multiple times in the record.
7. In the adjacent field, select one of the following options:

Maximum Occurrence Options	**Description**
Value	Select Value and then specify the maximum number of occurrences in the adjacent field.
Field	Select Field and specify the field that indicates the number of occurrences of this field in the adjacent drop-down list. The contents of the drop-down list are the other fields already defined in the layout.

8. Use the Prior Field Offset field to skip over data you do not want to extract or to redefine data in overlapping groups or fields. Accept the default offset, 0 (zero), if this group immediately follows the previous group or field, or if there is no previous field.

If the field to define is not the first field, and no overlaps exist, the Prior Field Offset is not needed. The subsequent fields are calculated based on the field length entered for the first field.

If overlaps or gaps exist between the fields, use a positive or negative number to indicate the position of the first character of the current field relative to the last character of the previous field.

A positive number indicates that the current field starts *n* characters after the last character of the previous field. For example, if Field 1 starts in position 10 through 20 and Field 2 starts in position 24 through 31, specify a field offset of 4.

A negative number indicates that the current field overlaps the last *n* characters of the previous field. For example, if Field 1 starts in position 10 through 20 and Field 2 starts in position 18 through 25, to define Field 2, specify a field offset of -2.

9. Click OK.
10. To add fields to the group, see "Add a Field" on page 23.

Add a Record Type

In a fixed file layout, the data can represent different types of information. For example, an insurance company has a file of claim information, but the information represents multiple types of claims, such as medical claims, vision claims, and dental claims. A record type is needed when the data source contains more than one logical record type.

Each record in the data file contains something that identifies it as unique and distinguishes it from the other types of records. In the insurance claim example, this unique identifier is a field that contains a code for each type of claim. To identify the type of claim, build a condition statement. For example, a condition statement to identify dental claims can be *When recType = 'PAYD'*. The statement indicates that if the record meets the criteria, it is a dental claim and is treated accordingly.

To add a record type, complete the following steps:

1. Create a fixed layout or select a fixed layout that already exists.
2. On the Details tab, select the Defines Multiple Record Types check box.
3. Click the Fields tab.

4. Define any fields that are needed to determine your record types.

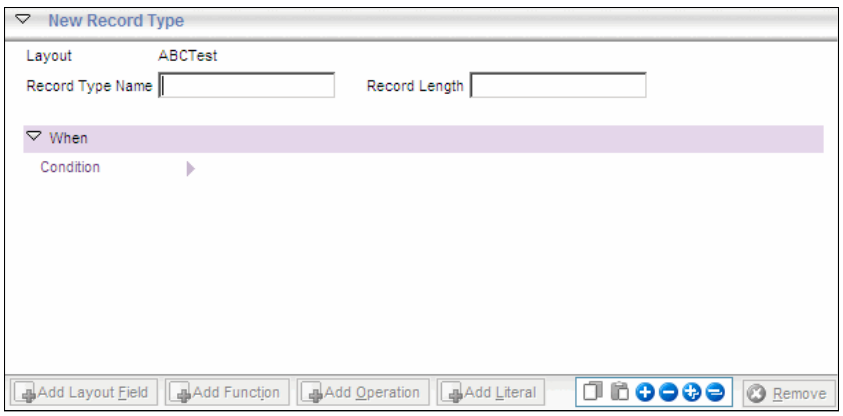
   These fields appear in the Fields list above the record type you will add in the next step. In the insurance example, the recType field is used to determine the type of claim for each record.

   For instructions on how to add a field, see "Add a Field" on page 23.

5. Select the location where you want to insert the record type and click Add > Record Type. The system inserts the new record type above the selected location.

   You can also double-click Add in the Fields list to insert the record type above where you double-clicked.

   Use the New Record Type page to create the new record type.



6. In the Record Type Name field, specify a descriptive name for the record type.

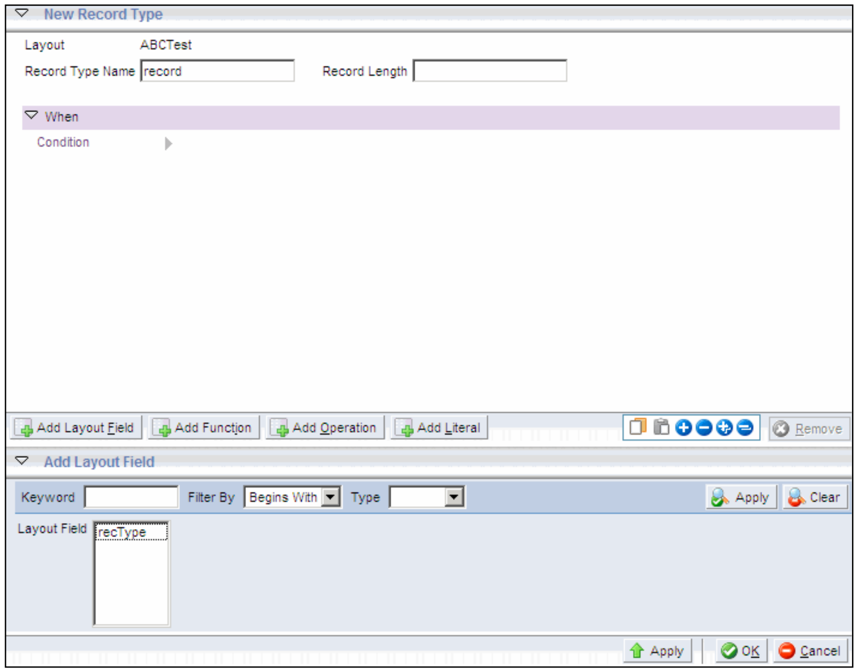
7. Optionally, specify the Record Length for the record type field. If the record data is variable in length (depending on the record type) and you used the record ending option Layout Defined, specify the record length.

8. To build a condition statement to identify a specific record type, complete the following steps:

   a. Under When, click Condition.

      The expression builder buttons are now available.

b. Use the expression builder buttons to create a condition statement. In the example, the Add Layout Field displays in the bottom pane when you click Add Layout Field. The fields you defined in step 4 display in the list of layout fields.



c. Based on the condition statement, select the appropriate information in the bottom pane and click Apply.

d. Continue to build the condition statement using the following expression builder buttons:

Button	Description
Add Layout Field	Drop-down list of layout fields.
Add Function	Drop-down list of available functions.
Add Operation	Drop-down list of available operators.
Add Literal	Select Text or Numeric and then specify the literal text. Select Boolean and then select true or false.

e. Click Apply after each addition to the condition statement.

f. When the condition is complete, click OK to return to the Fields tab.

9. Begin adding fields to the record type. For instructions on how to add fields, see “Add a Field” on page 23.

Add a Sublayout

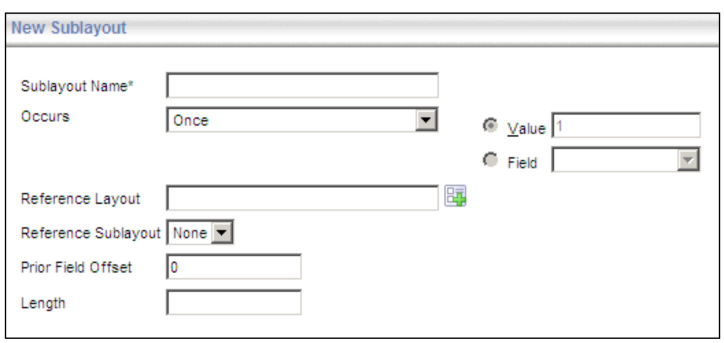
A sublayout in a fixed layout can be used to:

- Define a fixed number of bytes according to another layout (delimited, XML, ISO 8583, or Java Object).
- Define a portion of a record according to another fixed layout (to allow the reuse of common structures).
- Contain groups of fields that occur multiple times in the source data file. Using sublayouts makes it easier to extract the data.

Note Before you use a sublayout to define an entirely separate set of data stored in a single field, define a layout for this data. You can then refer to that layout when you create the sublayout.

- To add a sublayout, complete the following steps:

1. Create a fixed layout or select a fixed layout that already exists.
2. Click the Fields tab.
3. Select the location where you want to insert the sublayout and click Add > Sublayout. The system inserts the new sublayout above the selected location.
   You can also double-click Add in the Fields list to insert a sublayout above where you double-clicked.
   Use the New Sublayout page to create the new sublayout.



4. Specify the Sublayout Name.
5. Specify whether the field Occurs once or multiple times in the input file.

6. In the adjacent field, select one of the following options:

Maximum Occurrence Options	Description
Value	Select Value and then specify the maximum number of occurrences in the adjacent field.
Field	Select Field and specify the field that indicates the number of occurrences of this field in the adjacent drop-down list. The contents of the drop-down list are the other fields already defined in the layout.

7. Optionally, specify a Reference Layout. This is a previously created layout that defines the data in the field specified in step 3 through step 6. You cannot reference a layout that contains multiple record types.
8. Optionally, specify a Reference Sublayout. This is a sublayout in the reference layout that defines the data. Use a sublayout to narrow the fields available for capture. Sublayouts that contain a reference layout are not available for selection.
9. Use the Prior Field Offset to skip over data you do not want to extract or to redefine data in overlapping groups or fields. Accept the default offset, 0 (zero), if this group immediately follows the previous group or field, or if there is no previous field.

   To skip over data, specify a positive offset. For example, if two 20-character fields are located between the previous field and the current field, specify 40.

   To redefine data if the current group overlaps the previous group or field, specify a negative offset. For example, if the last two characters of the previous field are also the first two characters of the current group, specify -2.
10. Specify the Length of the field.
11. Click OK.

Editing a Fixed Layout

When you are working on a fixed layout, you can:

- Generate a Layout Automatically from a Fixed File
- Create a Layout Using Express Define

When you are working on any type of layout, you can perform any of the following tasks:

- Edit a sublayout, record type, group, or field, depending on the layout type.
- Remove a sublayout, record type, group, or field, depending on the layout type.
- Add an advanced path or URL.
- Duplicate a layout.
- Remove a layout.
- Test a layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

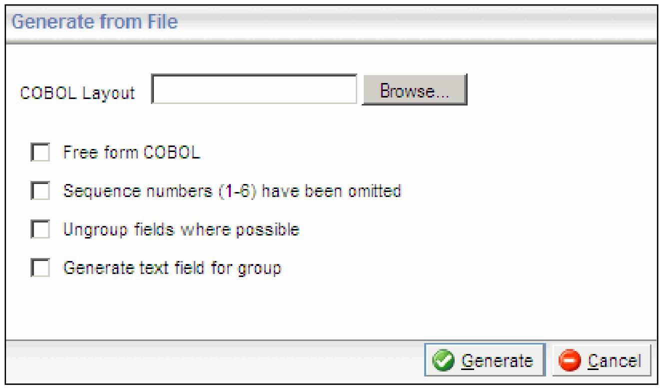
Generate a Fixed Layout Automatically

You can automatically generate the field for a fixed layout from a COBOL file description located on your local hard drive.

To generate a layout automatically, complete the following steps:

1. Click Rules > Layouts.
2. In the Manage Layouts pane, select a fixed layout.
3. In the Fixed Layout pane, click the Fields tab.
   If there are fields, groups, record types, or sublayouts listed in the Fields list, delete all items.

4. Click Generate.



5. Click Browse and navigate to the file to use.
6. Select the following check boxes, as applicable:

Option	Description
Free form COBOL	Select if the COBOL source is a free form source. The default source code is legacy Area A/B.
Sequence numbers (1-6) have been omitted	Select if the COBOL source is a non-free form source that omits sequence numbers (1-6).
Ungroup fields where possible	Select to ungroup fields. The system omits groups if the group does not contain an OCCURS clause. This option simplifies extraction field references.
Generate text field for group	Select to generate a text field for the entire content of a group field.

7. Click Generate.
   The system infers any multiple record types and generates the layout according to the specified options. The system changes the Field Locations options on the Details tab to Relative to prior field to facilitate future editing of the layout.

Create a Layout Using Express Define

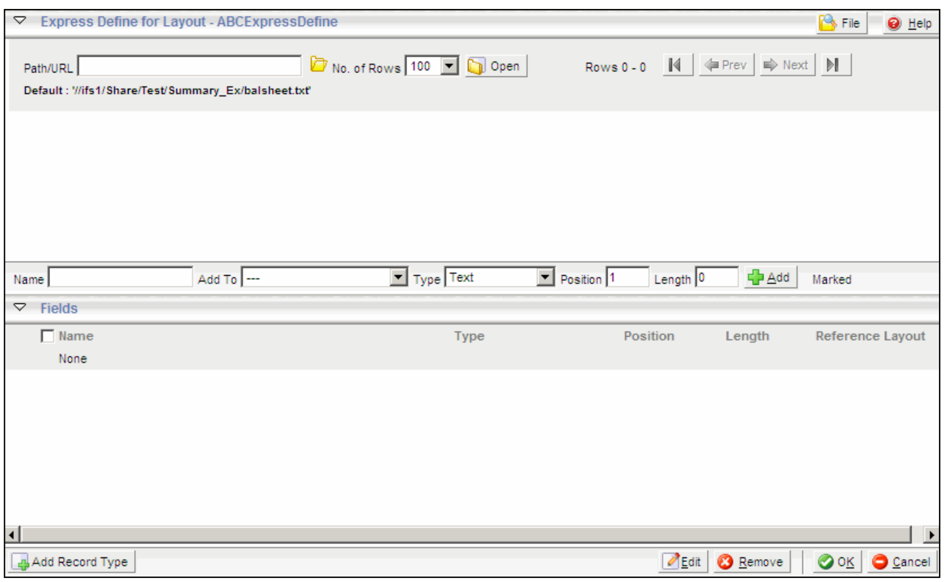
Using Express Define allows you to create a fixed layout by highlighting field locations in a text file and specifying the data types. To use this feature, click on the Details tab and specify Record Ending Line Sequential and Fields Location Fixed position in record.

To create a fixed layout using Express Define, complete the following steps:

1. Click Rules > Layouts.
2. Click New Layout > Fixed.
3. Complete the Details tab. For information on how to complete the fields on the Details tab, see “Completing the Fixed Layout Details” on page 19.

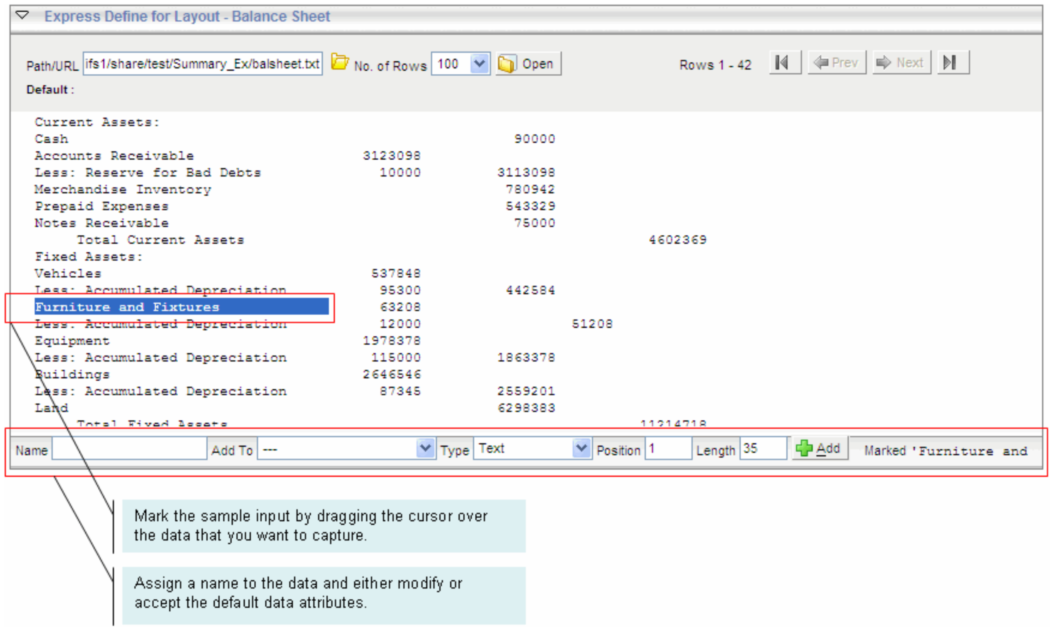
Note	You must select the options Record Ending Line Sequential and Fields Location Fixed position in record to enable the Express Define feature on the Fields tab.

4. If the layout needs record types, select the Defines Multiple Record Types option.
5. In the Path/URL field, you can specify a default path to the text file.
6. Click the Fields tab and click Express Define.
   If you entered a Path/URL on the Details tab, it displays as the Default.



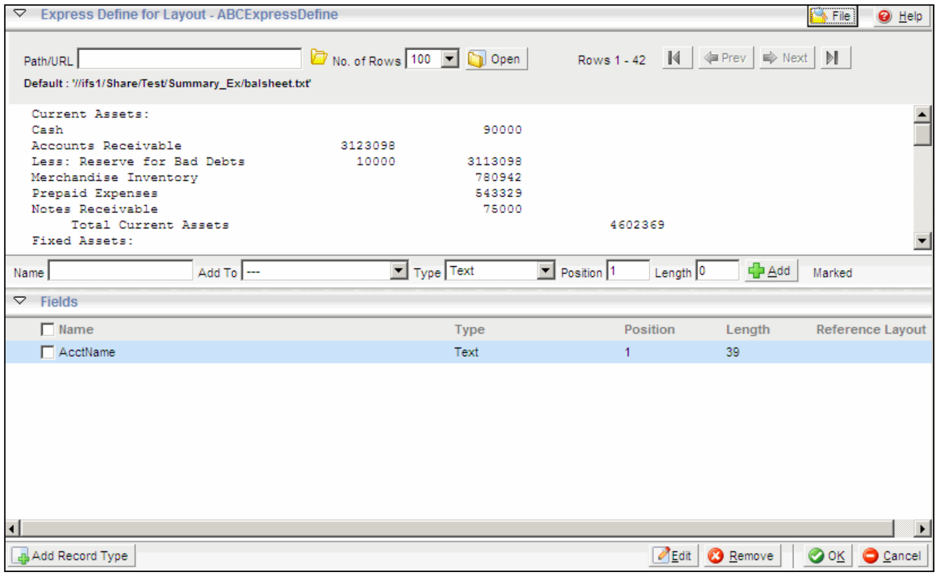
7. To open and view a text file, do one of the following:
   - If a Default is specified, click Open.
   - In the Path/URL field, specify the full path or URL for accessing the file, up to 255 characters. Use forward slashes, not backslashes, for compatibility with all platforms. Click Open.
   - Click the folder icon to select from the last ten paths used within the current session and click Open.

8. The first 100 rows of the text file displays in the top pane. To view more rows, select another value.
9. Click and drag to highlight a field location in the top pane. You can see the highlighted text next to the Marked field.



10. Complete the following details:
    - Specify a Name for the layout field.
    - Click Add To and select sublayout or group, if necessary.
    - Click Type and select Text, Numeric, Big Numeric, Date, or Boolean.
    - The system specifies the starting Position and Length of the field you selected. You can change one or both, if necessary.

11. Click Add to add the field to the layout in the bottom pane.



12. Click Add Record Type to define a record type for each logical record you want to identify for processing. This option is available when the Defines Multiple Record Types option is selected on the Details tab. For more information about record types, see "Add a Record Type" on page 34.
13. To change the properties of an existing sublayout, record type, group, or field, select the item you want to change, and click Edit. When you edit a field, you can change more properties, such as format, decimal positions, and decimal handling.
14. Repeat steps 9 through 11 to add fields. When you are done, click OK to return to the Fields tab.

4

Delimited Layouts

Delimited files contain variable-length data fields separated by a delimiting character. The most common delimiters are a comma and a tab.

Before you create the layout, examine the data to determine the following information. This information will be helpful as you define the layout.

- What is the specific data that you want to capture? The layout does not need to represent each type of record and every single field. You are only required to represent the records from which you plan to capture data, as well as the fields in which that data resides.
- Compare the amount of data to capture against the total amount of data in the input source. If your control point uses most of the data, you may want to capture all the data to maximize reusability for this layout.
- How is the data formatted? Is there a character used to separate the information in each record? What is that character?
- Do the records contain different types of information? For example, if the file contains claim information, does the file represent insurance claims for life, home owner's, and accident? See the example in "Record Types" on page 16.
- If there are errors when Assure DQ extracts the data, how do you want to handle the errors?

Delimited File Example

The following example shows a delimited file with a comma as the delimiter:

```
124325,9374087203,6004,TT,18733491,Hegel,John,A,19630410,27W575 Washington St.,Winfield,IL,60190
124325,1110974628,6004,PT,18700491,Brown,Sondra,A,19635678,123 Main St.,Winfield,IL,60190
75634,9374087296,1600,ET,18733785,Brown,Rebecca,L,19670717,295 Pine St.,Winfield,IL,60190
75634,1110974700,1600,PT,18733325,Jones,Jack,L,19904717,22W555 Apple St.,Winfield,IL,60190
100000,9301082873,1654,ET,18731201,Josephus,George,W,19430118,3735 Queen Ave.,Minneapolis,MN,55449
```

Field Types

Before you begin to build the layout, analyze the input data to determine the location and types of data. Depending on the options selected on the Details tab, a delimited layout can contain one or more of the following:

- **Field**—A field holds a single piece of information. You can capture as many fields in a record as you need. You may decide to only capture four fields, or you may decide to capture all the fields in the records. You can determine this after analyzing the input data. See "Add a Field" on page 51.
- **Group**—A fixed layout can contain repetitive fields. For these fields, you can define a group rather than defining each field separately. For example, auto insurance data might have a group named Driver and the fields in that group are related to the driver, such as name, address, city, state, ZIP code, driver's license, and SSN. See "Add a Group" on page 57.
- **Record Type**—If the data in the input source is uniform in structure but represents more than one type of data, use record types to distinguish the different types of logical records. For example, an insurance company has a file with claim information about accident, home owner, and life insurance claims. A record type provides the ability to distinguish between the claim types. See "Add a Record Type" on page 58.
- **Sublayout**—Sublayouts define the structure of data according to another layout type (fixed or XML) or another delimited layout. Sublayouts can also be used to define fields that occur multiple times in the input file to make it easier to extract the data. See "Add a Sublayout" on page 61.

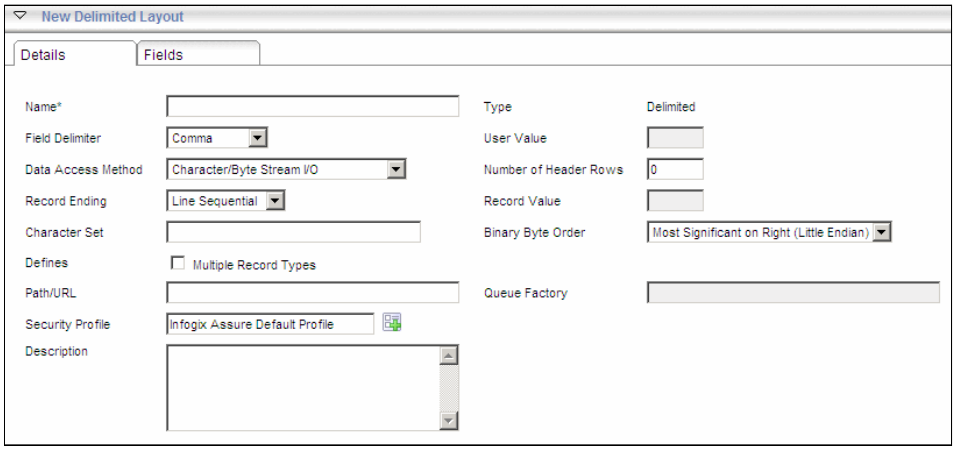
Creating a Delimited Layout

After you analyze the data and determine what data to capture, you are ready to create a delimited layout.

To create a delimited layout, complete the following steps:

1. Click Rules > Layouts.

2. Click New Layout > Delimited.
   You can now complete the details and fields for the layout in the New File Layout pane.



Completing the Delimited Layout Details

1. Specify a Name to reflect the content and type of data source.

Tip After the layout is saved, you cannot edit the layout name.

2. The default Field Delimiter character is Comma. If the character that separates the data in the records is a different character, select one of the following:
   - Tab
   - User-Defined—Specify the character in the adjacent User Value field.
3. Select a Data Access Method from the following options:

Data Access Method	Description
Character/Byte Stream I/O	Data is byte or character data accessed by standard Java input methods. This is the default data access method.
Record I/O	Data is IBM or Micro Focus COBOL record-oriented input.
Networked Character/Byte Stream I/O	Data is input stream byte or character data accessed via URLs with protocols such as ftp or http.

Data Access Method	Description
API Data	Data is byte or character data supplied through an Application Program Interface (API).
JMS Message Queue	Data is byte or character data supplied through a JMS queue.

4. Specify the Number of Header Rows. This is the number of rows with header information, and the system does not extract data from these rows.
5. Select a Record Ending option.

   For data access methods other than Record I/O, select one of the following Record Ending options, based on how individual records are physically defined in the file:

Record Ending Option	Description
Line Sequential	Records are detected in the file by a new-line byte or new-line sequence of bytes. This is the default record ending option. Use the adjacent Record Value field to specify the maximum record length.
Fixed Length	Records are a standard number of bytes long. Use the adjacent Record Value field to specify the fixed length for all records.
Record Delimiter	Records are separated in the file by a standard character, such as a comma. Use the adjacent Record Value field to specify the character used to separate records in the file. To specify a hex value, enter 0x (zero x) and then the two letter hex value. For example, if the hex value is ff, enter 0xff.

For a Record I/O data access method, select one of the following Record Ending options:

Record Ending Option	Description
Native z/OS I/O	Files with native record-oriented sequential or VSAM (virtual storage access method) z/OS data sets.
RDW 2	Mainframe files, downloaded to Windows or UNIX platforms, with records that begin with two-byte RDWs (record descriptor words).
RDW 4	Mainframe files, downloaded to Windows or UNIX platforms, with records that begin with four-byte RDWs (record descriptor words).
RDW 8	Mainframe files, downloaded to Windows or UNIX platforms, with blocks that begin with four-byte BDWs (block descriptor words), followed by records that begin with four-byte RDWs (record descriptor words).
Micro Focus Variable Record	Micro Focus COBOL variable sequential files.

6. If your data is from a different platform, the data may be encoded using a different character set than the platform on which Assure DQ is installed. To accommodate this situation, specify the conversion type in the Character Set field. If necessary, Assure DQ will convert the data to a compatible character set during control point execution.

   For example, suppose a Windows system produces your data source in the Cp1252 character set, but your Assure DQ server runs on a UNIX platform. You must specify that the character set of the data source is Cp1252.

7. The default Binary Byte Order is Most Significant on Right (little endian). Byte order depends on the computer processor that generates the data. Intel processors are generally little endian; most other processors are generally big endian (Most Significant on Left).

   If you are unsure which option to select, check with your system administrator to find out the type of computer that generated the input data.

8. If the file has more than one type of logical record, select the Defines Multiple Record Types check box. You can add record types for each logical record when this option is selected. For more information on how to create a record type, see "Add a Record Type" on page 58.
9. Specify the Path/URL to access the input source, up to 500 characters.

   For Networked Character/Byte Stream I/O access, specify a URL. Use forward slashes, not backslashes, for compatibility with all platforms. Host address is acceptable in all cases instead of hostname. Use syntax similar to the following examples:

   - ftp://hostname/filename or sftp://hostname/filename. To specify a user ID or password, select More > Network Credentials. Do not include network credentials in the URL. Some platforms require you to enclose the filename in single quotation marks. For specific guidelines, consult the documentation for your FTP server.
   - http://hostname:port/filename. The file must be directly accessible by the host. It can't be in a subdirectory or on a different machine or partition.
   - zip://zipfilepath/zipfilename.zip!filename.txt. This URL extracts a file located within a ZIP file.
   - jar://jarfilepath/jarfilename.jar!filename.txt. This URL extracts a file located within a jar file.

   JMS Message Queue access specifies the JNDI resource name that identifies the JMS queue.
10. If the Data Access Method selected is JMS Message Queue, specify the name of the Queue Factory, up to 500 characters. The Queue Connection Factory is a JNDI name that must be configured on the application server.
11. The system displays the Security Profile field only for a rules writer with security manager or security administrator authority. The security profile determines the permissions for this layout.

    If you have authority, you can specify the default security profile or a different profile.
12. Specify a Description of the file and the data you plan to capture.
13. Optionally, click Save to save the layout.

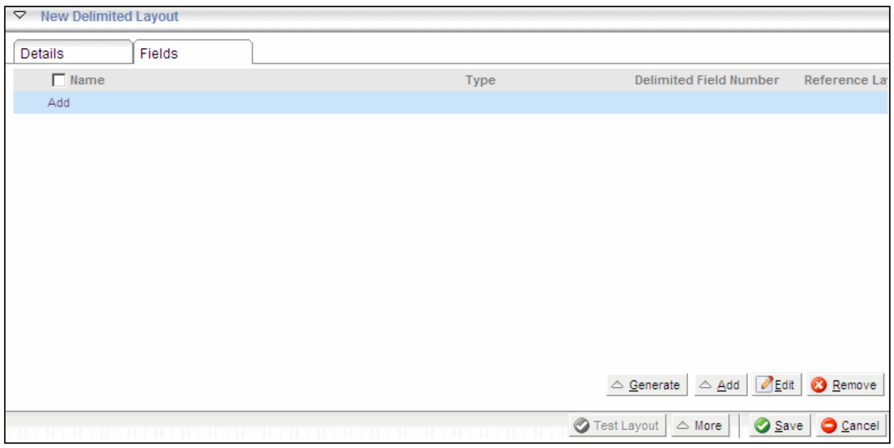
    You are now ready to specify the layout fields.

Add a Field

A field holds a single piece of information. You can add the fields in the delimited layout to specify the locations and types of data that the input source contains.

To add a field, complete the following steps:

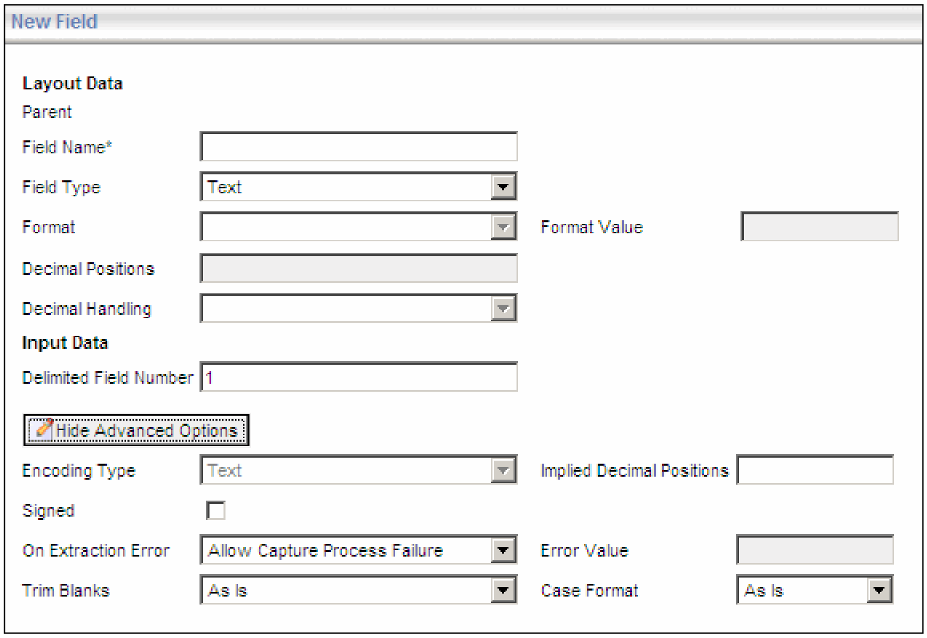
1. In the New Delimited Layout pane, click the Fields tab.



2. Select the location where you want to insert the field and click Add > Field. The system inserts the new field above the selected location. You can also double-click Add in the Fields list to insert a field above where you double-clicked.

Note	If you insert a layout field above a field, the fields after it do not renumber automatically. To renumber them, edit each subsequent field and increment the Delimited Field Number field. Fields with duplicate field numbers are permitted and are treated as redefinitions.

You can now complete the layout and input data fields. Depending on the field type selected, not every field in the window needs to be completed.



Completing Layout Data Section

3. Specify the Field Name. The name can be a maximum of 40 characters and can contain letters, numbers, and underscores.
4. Select a Field Type from the following options:

Field Type	Description
Text	For fields containing characters or numbers not used in performing calculations.
Numeric	For fields containing numbers up to 15 digits. Big Numeric is the preferred selection for numeric fields, but in some situations, Numeric may be more efficient. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Big Numeric	For fields containing numbers. This is the preferred selection for numeric fields. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.

Field Type	Description
Date	For fields containing dates. Date separators are stripped out by the system during extraction.
Boolean	For fields representing true or false values.

5. Do one of the following:
   - If the field type selected in step 4 was Numeric or Big Numeric, continue to step 6.
   - If the field type selected in step 4 was Date, skip to step 7.
   - If the field type selected in step 4 was Text or Boolean, skip to step 11.
6. Select a Format for Numeric or Big Numeric from the following options:

Format Type	Description
Default	Select Default if the input data does not contain non-numeric characters other than a decimal point.
Lenient	Select Lenient to specify a locale, strip out non-numeric characters, or indicate that parentheses enclose negative numbers. For more information on how to enter a parsing pattern, see step 8.

7. Select a Format for Date from the following options:

Format Type	Description

ISO 8601	For date with a user–defined format (a date format other than ISO 8601 or YY/MM), enter a valid format.
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	`y` Year
	`M` Month
	`d` Day of the month
	`k` Hour in day (1-24)
	`H` Hour in day (0-23)
	`h` Hour in am/pm (1-12)
	`K` Hour in am/pm (0-11)
	`m` Minute in hour
	`s` Second in minute
	`D` Day in year
	Examples of user-defined date formats are:
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	Examples of user-defined time formats are:
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

YY/MM	Date is in the format YY/MM, where YY is the last two digits of the year and MM is the two digits representing the month. Examples of dates in this format are 07/01, 97/12, and 06/11.
User-Defined	Select if the date format contains formatting characters other than hyphens or colons (ISO 8601 compliant dates). See step 9 for more information on how to enter a user-defined format in the Format Value field.

8. Optionally, for Numeric, Big Numeric, or Date field types, specify a parsing pattern or locale in the adjacent Format Value field from the following options:

Format Value	Description
Numeric or Big Numeric with a lenient format	Enter p: followed by a parsing pattern. For example, if the input data contains negative numbers enclosed in parentheses, has four digits before the decimal and two digits after the decimal, the parsing pattern is P:0000.00;(#). Go to the Java Web site at http://java.sun.com/j2se/1.4.2/docs/api/java/text/DecimalFormat.html for valid parsing syntax.

User-defined date format	If the date field format is user-defined, specify a valid format.
	
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	
	`y` Year
	`M` Month
	`d` Day of the month
	`k` Hour in day (1-24)
	`H` Hour in day (0-23)
	`h` Hour in am/pm (1-12)
	`K` Hour in am/pm (0-11)
	`m` Minute in hour
	`s` Second in minute
	`D` Day in year
	
	Examples of user-defined date formats are:
	
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	
	Examples of user-defined time formats are:
	
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

9. For Numeric or Big Numeric field types, specify the number of Decimal Positions the layout field should have. If you specify decimal positions, use the Decimal Handling field below to indicate whether to truncate or round input data to a specified number of decimal places.
10. Specify Decimal Handling to round or truncate the input data to the number of decimal places specified in step 9. By default, the final decimal position of numeric and big numeric values is rounded up if the input data has more decimal positions than the layout field.
    - Rounding Example—If the number of decimals selected is two, then the number 34.255 is rounded to 34.26.
    - Truncating Example—If the number of decimals selected is two, then the number 34.255 is truncated to 34.25.

Completing the Input Data Section

11. Specify the Delimited Field Number to indicate the sequence of the field on the record or line, counting from left to right (1 for the first field, 2 for the second field, and so on).

Advanced Options/Hide Advanced Options

The remaining Input Data fields are advanced options. Click Advanced Options to show the remaining fields. Click Hide Advanced Options to hide the remaining fields.

12. The Encoding Type for the format of the input data to capture is Text, by default.
13. The Implied Decimal Position field is optional and indicates the implied location of the decimal. This information applies only to text or numeric encoded data that does not physically contain a decimal character.
14. For numeric fields in a COBOL file on an IBM mainframe, select the Signed check box if the field is a signed field.
    A signed field is composed of regular Extended Binary Coded Decimal Interchange Code (EBCDIC) numeric characters, one character per byte, for all the digits of the field except the one that holds the sign, either the most-significant (sign leading) or the least-significant (sign trailing) digit. The digit that holds the sign combines with the sign of the number and the digit. A signed field saves one byte that the sign would otherwise occupy.

15. Use On Extraction Error to specify how the system will respond if the input data is missing or does not match the specified encoding type or format/pattern. Select a response from the following list of options:

Option	System Response
Allow Capture Process Failure	Stop processing and report a capture processing error.
Substitute Literal	Use an error value of your choice and assign the value if an extraction error occurs.
Substitute Null	Use Null in place of the value that could not be captured.

16. Error Value is available if Substitute Literal was selected in the previous step. Specify a default value to use if an extraction error occurs. For a date field, enter a date in ISO format.
17. Trim Blanks is available if the specified field type selected is Text or Boolean. Specify if the leading and trailing blank characters should be truncated.
18. Case Format is available if the field type selected is Text. Specify how to convert the text of the case of the characters:

Select	Description
As Is	Does not convert the case of the text.
Lower	Converts the case of the text to all lower case.
Uppercase	Converts the case of the text to all upper case.

19. Click OK.

    The lower pane displays the Delimited Layout with the name and type of the field just added.
20. Repeat step 2 to step 19 to add another field.
21. Click Save after adding a field.

Add a Group

A fixed layout can contain fields that belong together. You can define a group for these fields and then add the fields to the group. You can also specify if the group occurs once or multiple times.

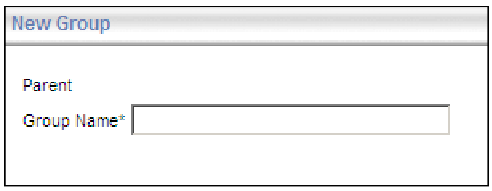
Groups and fields are defined in the same sequence as in the file.

To add a group, complete the following steps:

1. Create a delimited layout or select a delimited layout that already exists.
2. Click the Fields tab.
3. Select the location where you want to insert the group and click Add > Group. The system inserts the new group above the selected location.

   You can also double-click Add in the Fields list to insert a group above where you double-clicked.

   Use the New Group page to create the new group.

4. Specify Group Name. This must be a unique name that has not been used for a field, group, record type, or sublayout in the current layout.
5. Click OK.
6. To add fields to the group, see "Add a Field" on page 51.

Add a Record Type

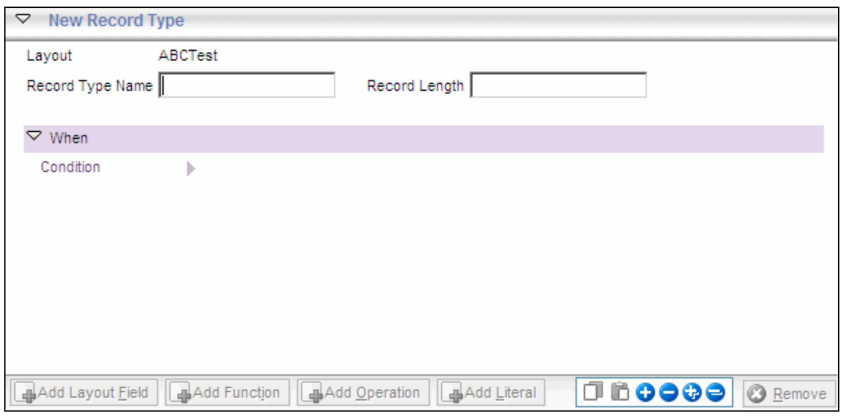
In a delimited file layout, the data can represent different types of information. For example, an insurance company has a file of claim information, but the information represents multiple types of claims, such as medical claims, vision claims, and dental claims. A record type is needed when the data source contains more than one logical record type.

Each record in the data file contains something that identifies it as unique and distinguishes it from the other types of records. In the insurance claim example, this unique identifier is a field that contains a code for each type of claim. To identify the type of claim, build a condition statement. For example, a condition statement to identify dental claims can be *When recType = 'PAYD'*. The statement indicates that if the record meets the criteria, it is a dental claim and is treated accordingly.

To add a record type, complete the following steps:

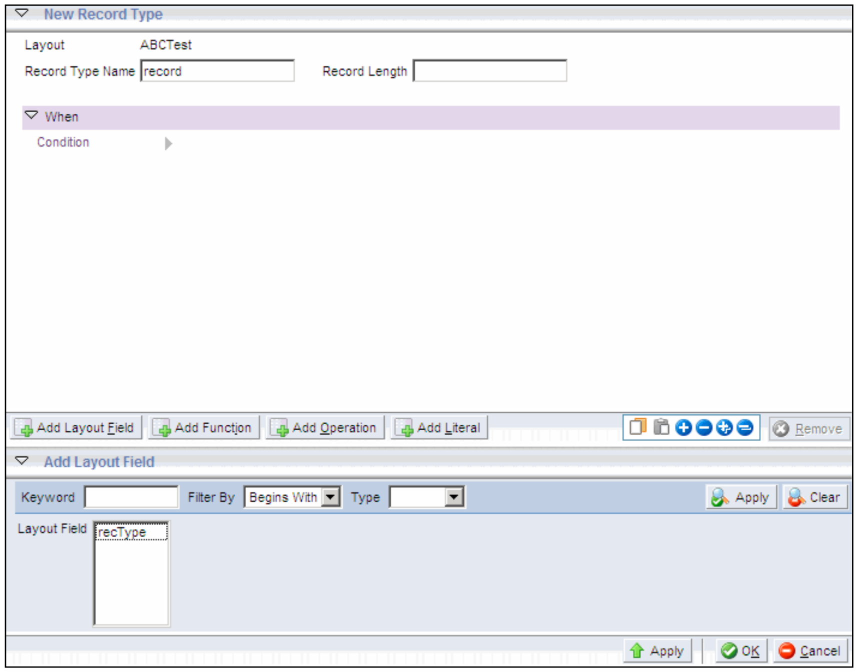
1. Create a delimited layout or select a delimited layout that already exists.
2. On the Details tab, select the Defines Multiple Record Types check box.

3. Click the Fields tab.
4. Define any fields that are needed to determine your record types.
   These fields appear in the Fields list above the record type you will add in the next step. In the insurance example, the recType field is used to determine the type of claim for each record.
   For instructions on how to add a field, see “Add a Field” on page 51.
5. Select the location where you want to insert the record type and click Add > Record Type. The system inserts the new record type above the selected location.
   You can also double-click Add in the Fields list to insert a record type above where you double-clicked.
   Use the New Record Type page to create the new record type.



6. In the Record Type Name field, specify a descriptive name for the record type.
7. To build a condition statement to identify a specific record type, complete the following steps:
   a. Under When, click Condition.
      The expression builder buttons are now available.

b. Use the expression builder buttons to create a condition statement. In the example, the Add Layout Field displays in the bottom pane when you click Add Layout Field. The fields you defined in step 4 display in the list of layout fields.



c. Based on the condition statement, select the appropriate information in the bottom pane and click Apply.

The field name is inserted in the condition statement.

d. Continue to build the conditional statement using the following expression builder buttons:

Button	Description
Add Layout Field	Drop-down list of layout fields.
Add Function	Drop-down list of available functions.
Add Operation	Drop-down list of available operators.
Add Literal	Select Text or Numeric and then specify the literal text. Select Boolean and then select true or false.

e. Click Apply after each addition to the condition statement.

f. When the condition is complete, click OK to return to the Fields tab.

8. Begin adding fields to the record type. For instructions on how to add fields, see "Add a Field" on page 51.

Add a Sublayout

A sublayout in a delimited layout can be used to:

- Define a fixed number of bytes according to another layout (fixed or XML).
- Define a portion of a record according to another delimited layout (to allow the reuse of common structures).
- Contain groups of fields that occur multiple times in the source data file. Using sublayouts makes it easier to extract the data.

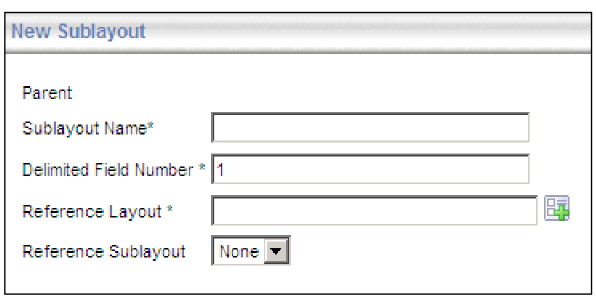
Note	Before you use a sublayout to define an entirely separate set of data stored in a single field, define a layout for this data. You can then refer to that layout when you create the sublayout.

To add a sublayout, complete the following steps:

1. Create a delimited layout or select a delimited layout that already exists.
2. Click the Fields tab.
3. Select the location where you want to insert the sublayout and click Add > Sublayout. The system inserts the new sublayout above the selected location.

   You can also double-click Add in the Fields list to insert a sublayout above where you double-clicked.

   Use the New Sublayout page to create the new sublayout.



4. Specify the Sublayout Name.
5. Specify the Delimited Field Number to indicate the position number of the field in the record or line, counting from left to right. (1 for the first field, 2 for the second field, and so on.)

6. Specify a Reference Layout. This is a previously created layout that defines the data in the field specified in step 3 through step 5. You cannot reference a layout that contains multiple record types.
7. Optionally, specify a Reference Sublayout. This is a sublayout in the reference layout that defines the data. Use a sublayout to narrow the fields available for capture. Sublayouts that contain a reference layout are not available for selection.
8. Click OK.

Editing a Delimited Layout

When you are working on a delimited layout, you can:

- Generate a Delimited Layout Automatically

When you are working on any type of layout, you can perform any of the following tasks:

- Edit a sublayout, record type, group, or field, depending on the layout type.
- Remove a sublayout, record type, group, or field, depending on the layout type.
- Add an advanced path or URL.
- Duplicate a layout.
- Remove a layout.
- Test a layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

Generate a Delimited Layout Automatically

You can automatically generate the fields for a delimited layout from a file located on your local hard drive or from a Path/URL specified on the Details tab. Note that the file must be accessible from the server, and the Path/URL field must specify the full path to access the file.

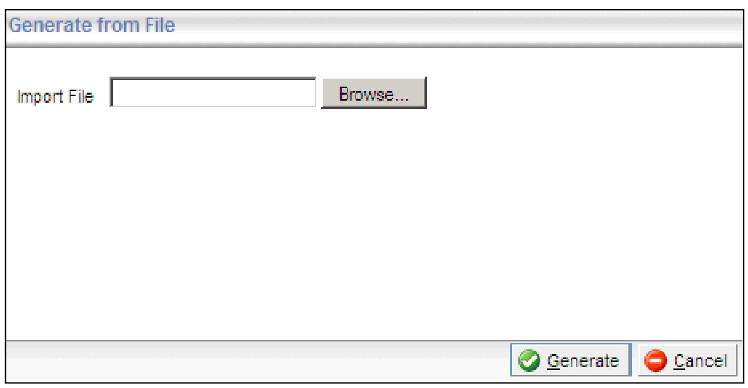
The system infers the layout field names from the header rows, if available. Otherwise, the system generates the field names. If the user-defined field names do not conform to the system naming rules, the system transforms the names to follow the rules.

The system infers the field type from the data. After you generate the layout, ensure that the system generated the appropriate field types.

Note	The Generate button is disabled if the data access method is API Data.

To generate a layout automatically, complete the following steps:

1. Click Rules > Layouts.
2. In the Manage Layouts pane, select a delimited layout.
3. In the Delimited Layout pane, click the Fields tab.
   If there are fields, groups, record types, or sublayouts listed in the Fields list, delete all items.
4. Click Generate and select one of the following options:
   - From Path/URL if you specified a Path/URL on the Details tab. The file must be accessible from the server, and the Path/URL must specify the full path to access the file.
   - From File to create a layout based on a file on your local hard drive. The system then prompts you to browse for the file.

   a. Click Browse and navigate to the file to use.
   b. Click Generate. The system generates the layout.

5

XML Layouts

XML (Extensible Markup Language) is a World Wide Web Consortium (W3C) recommended markup language. Its primary purpose is to facilitate the sharing of data across different information systems, particularly systems connected via the Internet. XML is a standard way of tagging data so it can be read and interpreted by a variety of Web browsers, software, servers, and clients, regardless of how it was created.

An XML layout defines data with XML tags delimiting groups and fields for use by Assure DQ. To create an XML layout, obtain a sample of the XML document or the XML schema. Consider the following questions:

- What is the specific data that you want to capture? The layout must describe the structure of any data you plan to capture.
- Compare the amount of data to capture to the total amount of data in the input source. If your control point uses most of the data, you may want to describe all the data to maximize reusability for this layout.

Approaches to Creating a Layout

The system can generate a layout for you from a sample XML document. This is a good option if you have a sample that contains every element you need. It is ok if the sample contains additional elements that you don't need, too. You can always delete them from the layout after you generate it. See "Generate a Layout from a Sample Document" on page 66.

If you do not have a sample document that is simple and complete, the system may be able to generate a layout from the schema, instead. This approach works well if you have a relatively simple schema with a single, clearly identifiable root element. See "Generate a Layout From a Simple Schema" on page 69.

If your schema is relatively complex and contains multiple elements that could be the root, you will need to generate a schema layout first. See "Generate a Schema Layout" on page 73.

As its name implies, a schema layout maps the structure of the schema, not the structure of your XML document. Therefore, this approach requires an additional step. After you generate the schema layout, you must create an XML document layout that references the schema layout and identifies the root element. See "Reference a Schema Layout" on page 74.

If your schema has multiple root elements containing data you want to capture, the system cannot automatically generate a layout for you. You must manually construct a layout and create a sublayout for each root element. Manually constructing a layout is also a good approach if you want to capture a minimal amount of data and expose users to as little complexity as possible when they work with your layout. See "Manually Creating a Document Layout" on page 75.

Generate a Layout from a Sample Document

The system can generate a layout for you from a sample XML document. This is a good option if you have a sample that contains every element you need. It is ok if the sample contains additional elements that you don't need, too. You can always delete them from the layout after you generate it.

The structure of the sample must match the structure of the actual XML documents you plan to process.

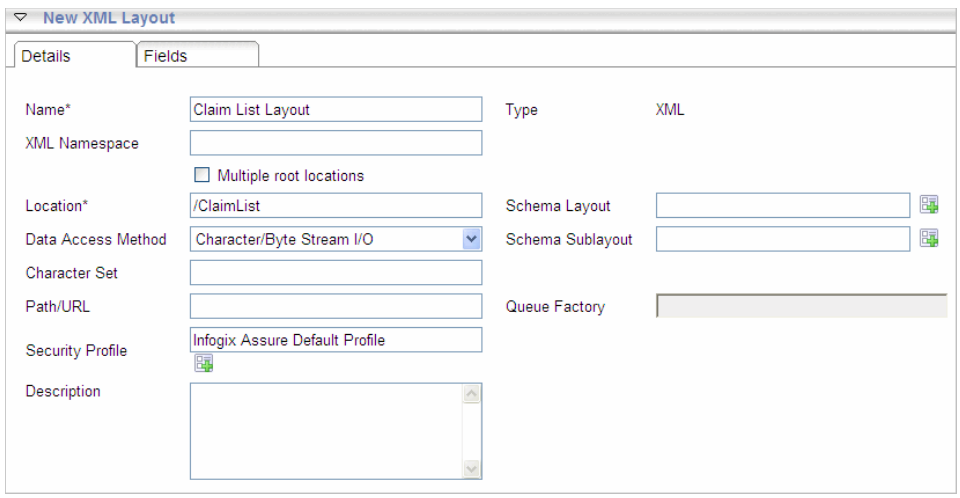
The simple XML document below contains claim data. ClaimList is the root (highest level) element. There are two Claim elements in this particular sample. Each claim contains the same set of child elements, such as claimNum, claimType, claimAmt, and so on.

```
<?xml version="1.0" encoding="utf-8"?>
<ClaimList>
<Claim>
   <claimNum>11241-784-12</claimNum>
   <claimType>A</claimType>
   <claimAmt>798.56</claimAmt>
   <claimDate>20070523</claimDate>
   <lastName>Brown</lastName>
   <firstName>Rebecca</firstName>
   <streetAdd>295 Pine St.</streetAdd>
   <city>Winfield</city>
   <state>IL</state>
   <zip>60190</zip>
</Claim>
<Claim>
   <claimNum>11246-754-01</claimNum>
   <claimType>L</claimType>
   <claimAmt>100,275.13</claimAmt>
   <claimDate>20070523</claimDate>
   <lastName>Baki</lastName>
   <firstName>Dean</firstName>
   <streetAdd>0N028 Ambleside, #2505</streetAdd>
   <city>Winfield</city>
   <state>IL</state>
   <zip>60190</zip>
</Claim>
</ClaimList>
```

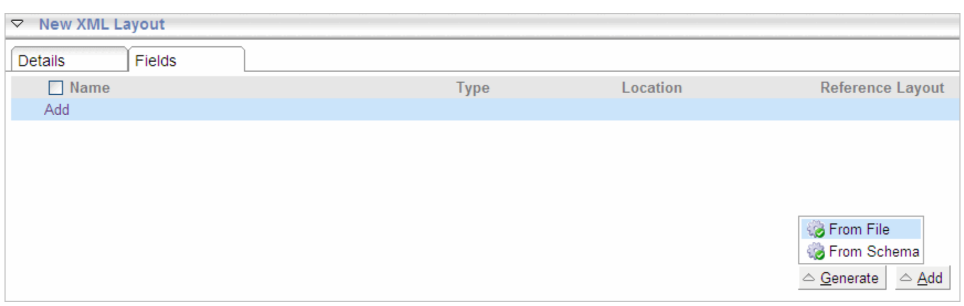
The system can successfully generate a layout from this sample. There is a single root element, ClaimList. In addition, the sample appears to contain all the types of elements that the user wants to validate.

To generate a layout from a sample XML document, complete the following steps:

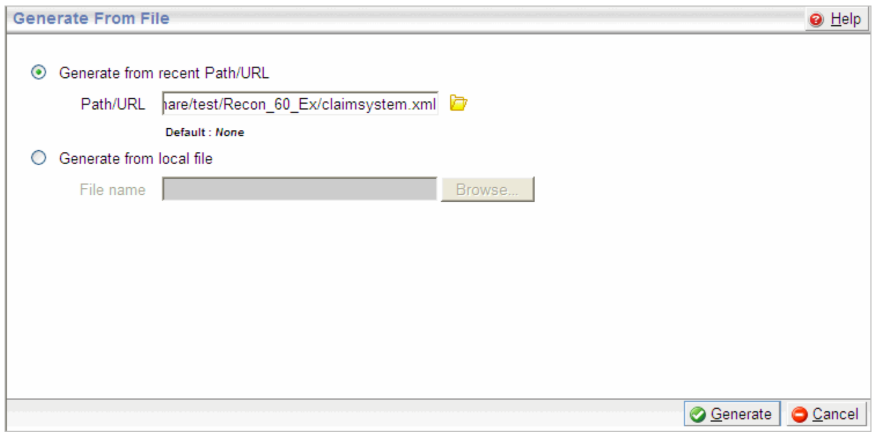
1. Click Rules > Layouts.
2. Click New Layout > XML.
3. Complete the following required fields on the Details tab:
   - Name
   - Location—Enter a forward slash and the name of the root element.
   -



4. On the Fields tab, click Generate > From File.

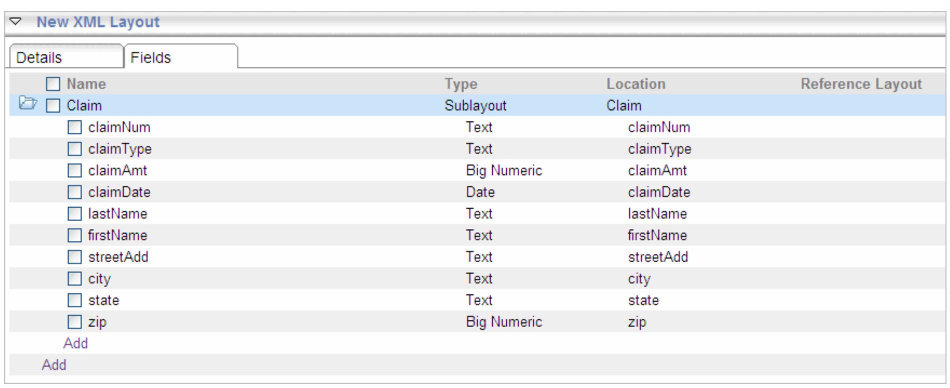


5. In the Generate From File window, select one of the following options to identify the location of your sample XML document:
   - Generate from recent path/URL—If you entered a default path/URL on the Details tab, it will display here. You can also select from the last ten files used, choose a file from the test data repository, or specify a path to your sample document.
   - Generate from local file—If the sample XML document is on your local or network drive, click Browse to select it.



6. Click Generate.

   The generated layout appears on the Fields tab.
7. Expand any folders and verify that the field types are correct.



8. Optionally, remove any sublayouts or fields that you are certain users will not want, to avoid confusion.
9. Return to the Details tab and enter the Path/URL for the test or production XML files described by the layout.

10. Test the layout.

To conduct a useful test, use a different file than the sample used to generate the layout.

Generate a Layout From a Simple Schema

If you do not have a sample document that is simple and complete, the system can generate a layout from the schema, instead. For example, the XML document below lists auditable events that recently occurred in an Assure DQ test environment.

Unfortunately, only a few auditable events appear on the list. They are all of the same type, DefChange (definition change). Many more types of auditable events would occur in a production environment or over a longer span of time, so the sample is not complete.

```
<?xml version="1.0" encoding="UTF-8"?>
<AuditableEvents xmlns="http://www.infogix.com/xml/auditTrail"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.infogix.com/xml/auditTrail
http://products.infogix.com/assure/schema/auditTrail.xsd"
appDeploymentName="Dev14_IGX_B70" version="7.0">
   <Filter fromDate="2011-04-14T00:00:00-05:00"/>
   <AuditableEvent timeOccured="2011-04-14T08:22:13-05:00"
eventTypeID="1" eventType="Import" userName="bbutters">
      <DefChange elementID="Sample Property Issue Use"
elementName="Sample Property Issue Use" versionID="27556"
elementTypeID="5" elementType="Control Entity" actionID="Update"
action="Updated"/>
      <DefChange elementID="IRWHOUSE Sample Query"
elementName="IRWHOUSE Sample Query" versionID="27555"
elementTypeID="1" elementType="Layout" actionID="Update"
action="Updated"/>
   </AuditableEvent>
   <AuditableEvent timeOccured="2011-04-14T09:39:46-05:00"
eventTypeID="2" eventType="Update" userName="bbutters">
      <DefChange elementID="AAA Claim System Layout"
elementName="AAA Claim System Layout" versionID="27559"
elementTypeID="1" elementType="Layout" actionID="Update"
action="Updated"/>
   </AuditableEvent>
   <AuditableEvent timeOccured="2011-04-14T09:40:55-05:00"
eventTypeID="2" eventType="Update" userName="bbutters">
      <DefChange elementID="Show me Claims" elementName="Show me
Claims" versionID="27560" elementTypeID="1" elementType="Layout"
actionID="Create" action="Created"/>
   </AuditableEvent>
</AuditableEvents>
```

The sample XML document above does not contain all the elements that future documents will have and that users are likely to want. Instead of generating a layout from the sample document, it is preferable to generate a layout from the schema.

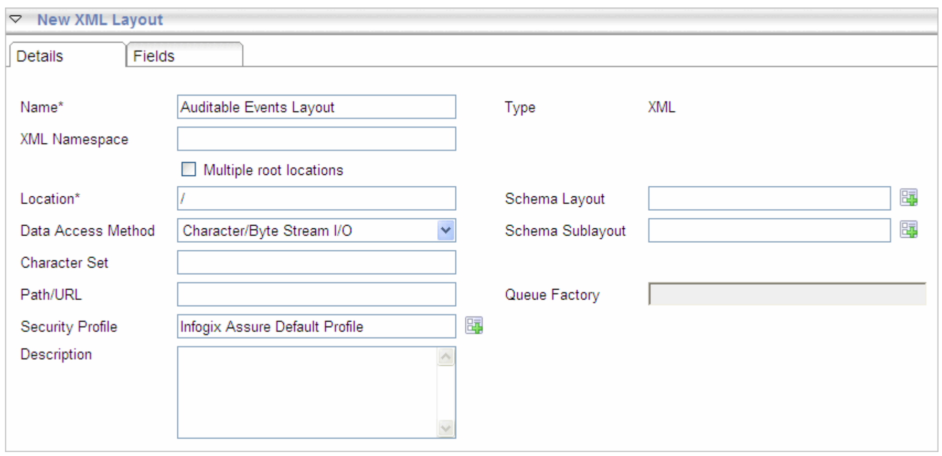
A portion of the schema that describes the auditable event listing is shown below.

```
<?xml version="1.0" encoding="UTF-8" ?>
- <xs:schema
targetNamespace="http://www.infogix.com/xml/auditTrail"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:this="http://www.infogix.com/xml/auditTrail"
elementFormDefault="qualified">
- <xs:element name="AuditableEvents">
- <xs:annotation>
  <xs:documentation>Auditable events recorded by the system that
meet the filter criteria, if specified.</xs:documentation>
  </xs:annotation>
- <xs:complexType>
- <xs:sequence>
  <xs:element name="Filter" type="this:FilterType" minOccurs="0"
/>
  <xs:element name="AuditableEvent" type="this:AuditableEventType"
minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
- <xs:attribute name="appDeploymentName" type="xs:string"
use="optional">
- <xs:annotation>
  <xs:documentation>The deployment name of the
application.</xs:documentation>
  </xs:annotation>
  </xs:attribute>
- <xs:attribute name="version" type="xs:string" use="optional">
- <xs:annotation>
  <xs:documentation>The version of the
application.</xs:documentation>
  </xs:annotation>
  </xs:attribute>
  </xs:complexType>
  </xs:element>
- <xs:complexType name="FilterType">
- <xs:annotation>
  <xs:documentation>The filter applied to this
export.</xs:documentation>
  </xs:annotation>
  <xs:attribute name="fromDate" type="xs:dateTime" />
  <xs:attribute name="toDate" type="xs:dateTime" />
  <xs:attribute name="eventType" type="xs:string" />
  <xs:attribute name="userName" type="xs:string" />
  </xs:complexType>
- <xs:complexType name="AuditableEventType">
- <xs:annotation>
  <xs:documentation>An auditable event recorded by the
system.</xs:documentation>
  </xs:annotation>
- <xs:sequence>
  <xs:element name="DefChange" type="this:DefChangeType"
minOccurs="0" maxOccurs="unbounded" />
  <xs:element name="DataChange" type="this:DataChangeType"
minOccurs="0" maxOccurs="unbounded" />
  <xs:element name="ScheduledJobChange"
type="this:ScheduledJobChangeType" minOccurs="0"
```

The system can successfully generate a layout from this schema. There is a single, easily identifiable root element, AuditableEvents.

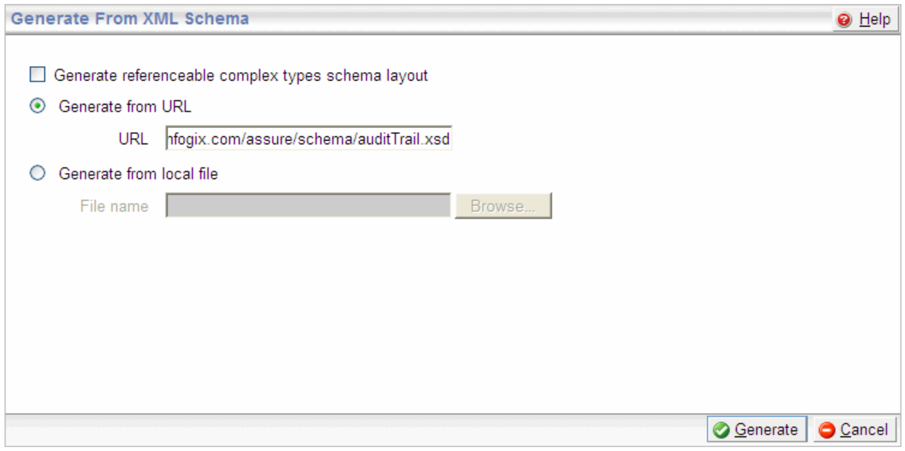
To generate a layout from a sample XML document, complete the following steps:

1. Click Rules > Layouts.
2. Click New Layout > XML.
3. Complete the following required fields on the Details tab:
   - Name
   - Location—Enter a forward slash.



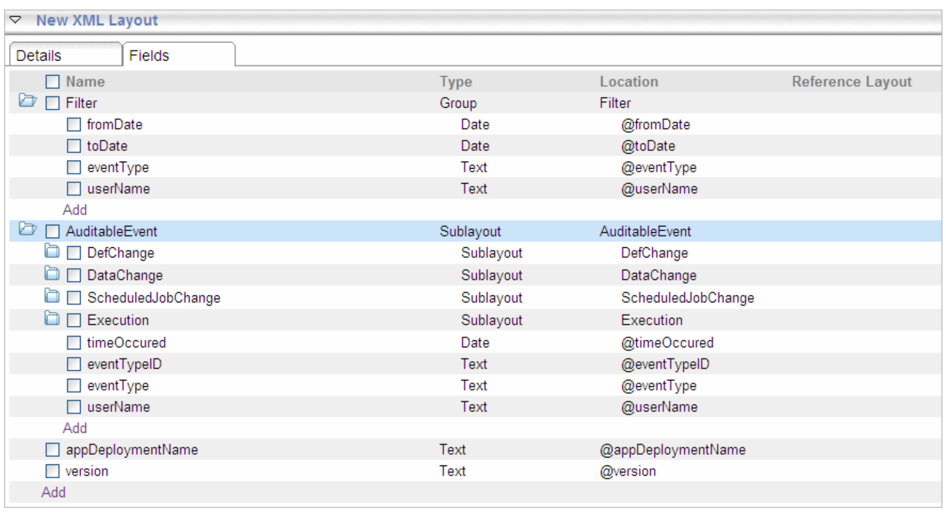
4. On the Fields tab, click Generate > From Schema.
5. In the Generate From Schema window, select one of the following options to identify the location of your schema:
   - Generate from URL—Select this option to access a schema at an http URL location.
   - Generate from local file—Browse to select an XML schema on your local hard drive or network.

6. Click Generate.



The generated layout appears on the Fields tab. If you get a #ULAY006 error message indicating the layout could not be generated, see "Generate a Schema Layout" on page 73.

7. Expand any folders and verify that the field types are correct.



8. Optionally, remove any sublayouts or fields that you are certain users will not want, to avoid confusion.

9. Return to the Details tab and enter the Path/URL for the test or production XML files described by the layout.

   Notice that when the system generates the layout from a schema, it fills in the Location and XML Namespace fields for you.

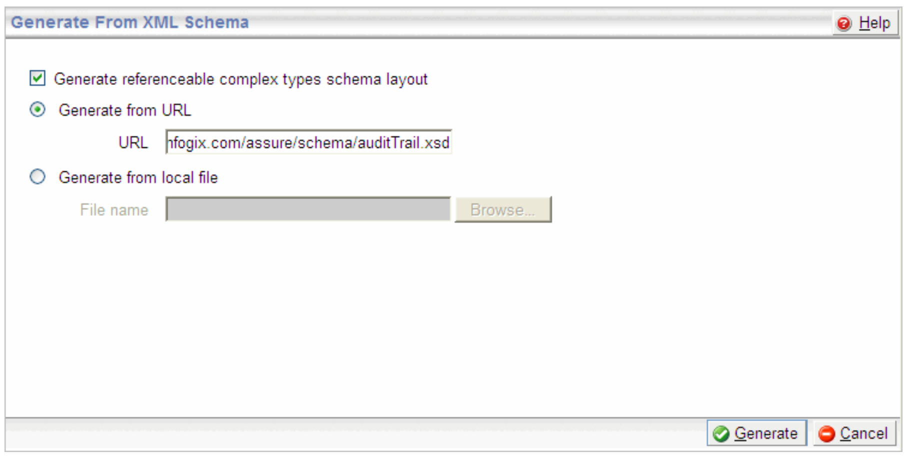
10. Test the layout.

Generate a Schema Layout

When you generate a document layout from a schema, the system will produce a #ULAY006 error if it cannot identify the root element. This error will occur if your schema is relatively complex and contains multiple elements that could be the root.

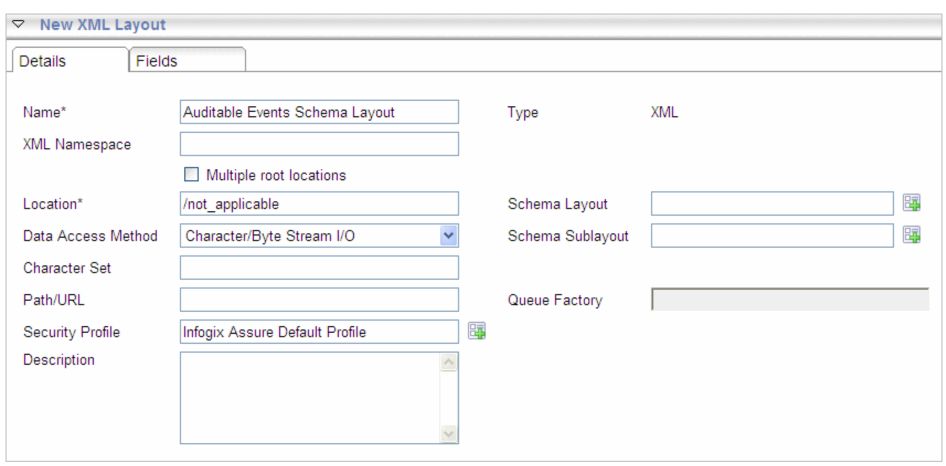
If you get this error, complete the following steps to generate a schema layout instead:

1. Select the option labeled "Generate referenceable complex types schema layout" and click Generate again.



   This option generates a schema layout instead of a document layout. The Fields tab will display and you will see a sublayout folder for each complex element within the schema. These are all the potential root elements.

2. Return to the Details tab and save your schema layout.



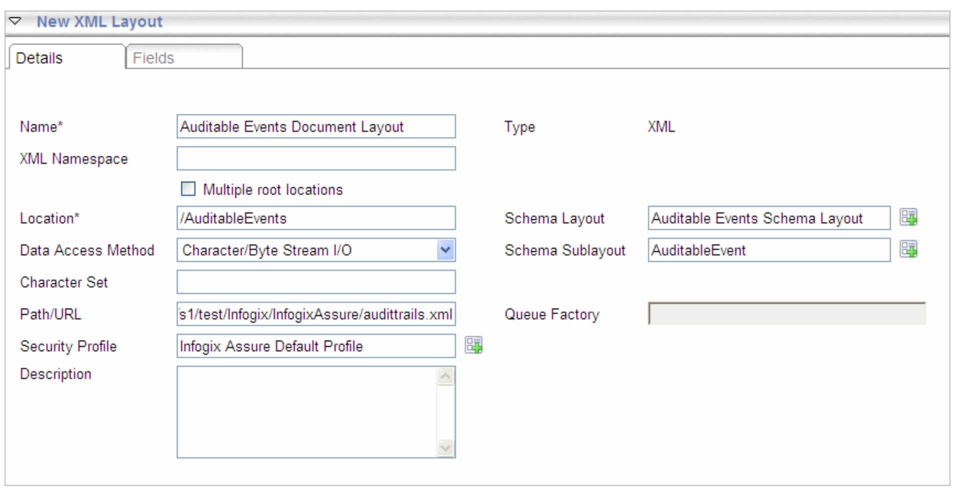
To avoid confusion, you may want to add “schema layout” to the layout name, so users don’t confuse it with a document layout.

Now you can easily create a layout for your XML document by referencing the schema layout and indicating the location of the root element.

Reference a Schema Layout

To create a document layout that references a schema layout, complete the following steps:

1. Click New Layout > XML.
2. Complete the following fields on the Details tab:
   - Name—Add “document layout” to the layout name, so users don’t confuse it with the schema layout.
   - Schema Layout—Select the schema layout you generated, above.
   - Schema Sublayout—Select the schema sublayout corresponding to the root element/complex type for your XML document.
   - Location—Enter a forward slash and the name of the root element corresponding to the schema sublayout you selected, above.

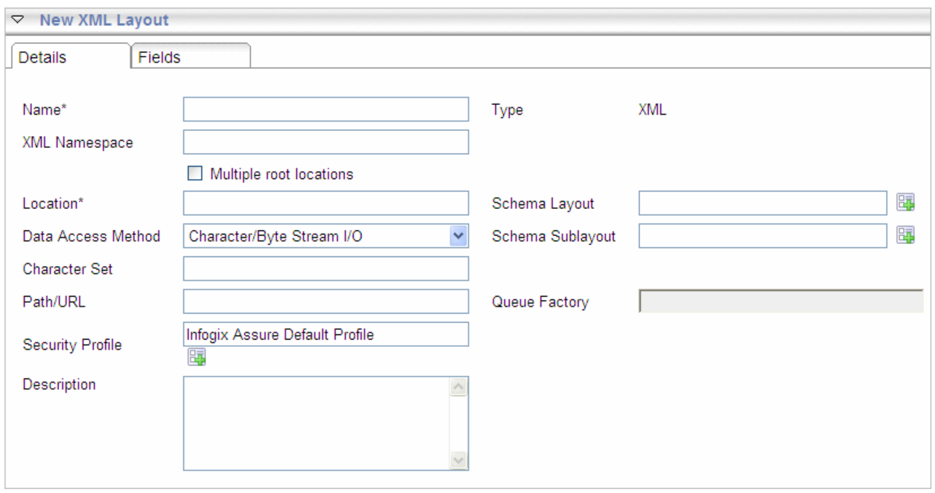


Manually Creating a Document Layout

If your schema has multiple root elements containing data you want to capture, the system cannot automatically generate a layout for you. You must manually construct a layout and create a sublayout for each root element. Manually constructing a layout is also a good approach if you want to capture a minimal amount of data and expose users to as little complexity as possible when they work with your layout.

To manually create an XML layout, complete the following steps:

1. Click Rules > Layouts.
2. Click New Layout > XML.
   You can now complete the details and fields for the layout.



Completing the XML Layout Details

1. Specify a name to reflect the content and type of data source.

   TIP After the layout is saved, you cannot edit the layout name.

2. Optionally, specify the full XML Namespace, if any, corresponding to the structure of the layout.
   An XML Namespace is standard for providing uniquely named elements and attributes in an XML instance. A namespace is identified by its Uniform Resource Identifier (URI). URIs do not need to follow the conventions of Web addresses, although they usually do.

For example, `xmlns="http://www.w3.org/1999/xhtml"` is a valid URI. All elements in the namespace must be unique.
An XML namespace does not require that its vocabulary be defined, but it is a fairly common practice to place either a Document Type Definition (DTD) or an XML Schema defining the precise data structure at the location of the namespace's URI.

3. Select Multiple Root Locations if your XML document has more than one root element.
4. In the Location field, enter a forward slash followed by the name of the root element of your XML schema.

   The Location field on the Details tab applies only to XML documents that have a single root element. If you selected Multiple Root Locations, above, go to the Fields tab instead. On the Fields tab, you can define sublayouts that specify the locations of alternative root elements and their content.
5. For documents that may be very large that contain a large amount of their data under Location that you do not need, specify an Exclude Location as an XPath expression in order to reduce the amount of data that is loaded into memory in order to produce the records for this layout. Multiple Exclude Locations can be specified, separated by a comma.

   For example, suppose you are defining a layout for a document that may be gigabytes in size, and you are only interested in some top level elements and attributes. You might have a Location that is /MyWholeDocument. Say that there are two high volume sub-trees of the document you are not interested in, "lotsOfthings" and "lotsOfOtherThings". To exclude them, you would specify an Exclude Location of /MyWholeDocument/lotsOfThings, /MyWholeDocument/lotsOfOtherThings.

6. Select a Data Access Method from the following options:

Data Access Method	Description
Character/Byte Stream I/O	Data is byte or character data accessed by standard Java input methods. This is the default data access method.
Networked Character/Byte Stream I/O	Data is input stream byte or character data accessed via URLs with protocols such as ftp or http.

Data Access Method	Description
API Data	Data is byte or character data supplied through an Application Program Interface (API).
JMS Message Queue	Data is byte or character data supplied through a JMS queue.

7. If the character set of the file is not the platform default, specify the character set in the Character Set field. If necessary, Assure DQ will convert the data to a compatible character set during control point execution.

   For example, suppose a Windows system produces your data source in the Cp1252 character set, but your Assure DQ server runs on a UNIX platform. You must specify that the character set of the data source is Cp1252.

8. Specify the Path/URL to access the XML document, up to 500 characters.

   For Networked Character/Byte Stream I/O access, specify a URL. Use forward slashes, not backslashes, for compatibility with all platforms. Host address is acceptable in all cases instead of hostname. Use syntax similar to the following examples:

   - ftp://hostname/filename or sftp://hostname/filename. To specify a user ID or password, select More > Network Credentials. Do not include network credentials in the URL. Some platforms require you to enclose the filename in single quotation marks. For specific guidelines, consult the documentation for your FTP server.
   - http://hostname:port/filename. The file must be directly accessible by the host. It can't be in a subdirectory or on a different machine or partition.
   - zip://zipfilepath/zipfilename.zip!filename.txt. This URL extracts a file located within a ZIP file.
   - jar://jarfilepath/jarfilename.jar!filename.txt. This URL extracts a file located within a jar file.

   For JMS Message Queue access, specify the JNDI resource name that identifies the JMS queue, up to 500 characters.

9. If the Data Access Method selected is JMS Message Queue, specify the name of the Queue Factory, up to 500 characters. The Queue Connection Factory is a JNDI name that must be configured on the application server.

10. Specify the Security Profile to associate with this layout. The system displays this option only if you are a rules writer with security manager or security administrator authority. The security profile determines the permissions for the layout.
11. Specify a Description of the file and the data you plan to capture.
12. Optionally, click Save to save the layout.

    You are now ready to specify the layout structure on the Fields tab by adding sublayouts, fields, and groups, as needed.

Add a Sublayout

If your XML schema has multiple root elements, you must define a sublayout for each root element. You can also define a sublayout for each repetitive set of fields you want to capture, such as a group of fields that occurs multiple times.

Sublayouts can also reference other existing layouts that describe data in a fixed, delimited, XML, ISO 8583, or Java Object format.

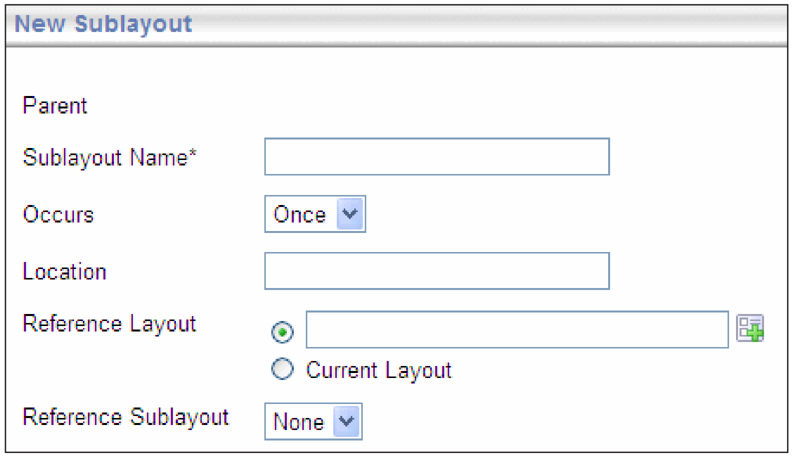
Note: Before you use a sublayout to define an entirely separate set of data stored in a single field, define a layout for this data. You can then refer to that layout when you create the sublayout.

To add a sublayout, complete the following steps:

1. Click the Fields tab.
2. Select the location where you want to insert the sublayout and click Add > Sublayout. The system inserts the new sublayout above the selected location.

   You can also double-click Add in the Fields list to insert a sublayout above where you double-clicked.

Use the New Sublayout page to create the new sublayout.



3. Specify the Sublayout Name. If there is an XML tag bracketing the group, you can use that as the name. Then you will not need to specify a Location, below.
4. Specify whether the sublayout occurs once or multiple times.
5. For Location, specify the XML tag that brackets the sublayout fields. This consists of a forward slash followed by an element name, for example, /MySublayout.

   For XML schemas with multiple root elements, enter a forward slash and the name of the root element that corresponds to the sublayout.

   If you used the element name as the sublayout name, above, the Location field is optional.
6. Optionally, specify a Reference Layout. This is a previously created layout that defines the data in the fields specified in step 2 through step 5. Select Current Layout to reuse the data structure of the current layout, or another sublayout within the current layout. You cannot reference a layout that contains multiple record types.
7. Optionally, specify a Reference Sublayout. This is a sublayout in the reference layout that defines the data. Use a sublayout to narrow the fields available for capture. Choose Many for the Occurs option, above, if you are referencing the current layout and the referenced layout is a parent of the sublayout you are defining.
8. Click OK.

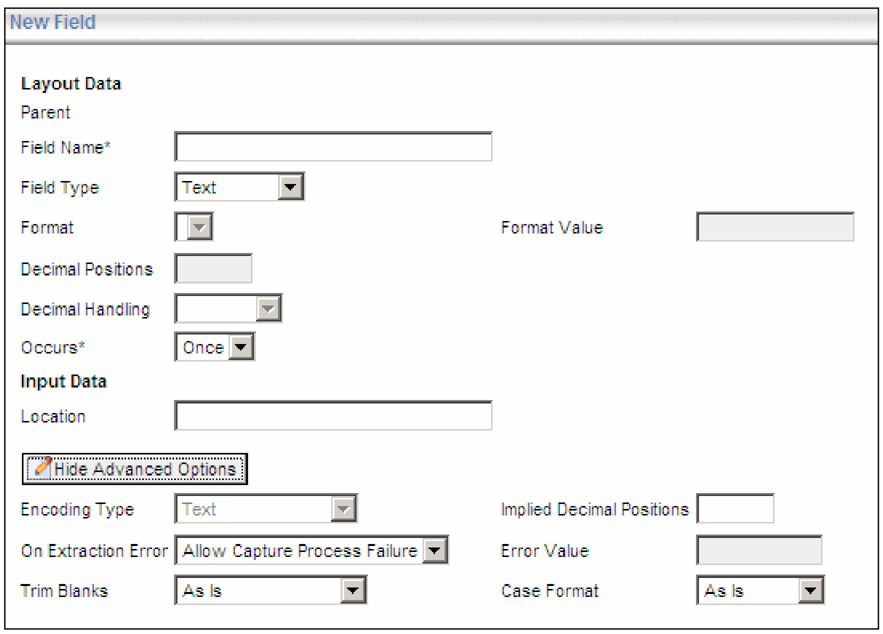
Add a Field

A field holds a single piece of information. You can capture as many fields as you need, from a single field up to all the fields in the XML document. When you add fields to your XML layout, you will specify the locations and types of data that the fields contain.

To add a field, complete the following steps:

1. Click the Fields tab.
2. Select the location where you want to insert the field and click Add > Field. The system inserts the new field above the selected location. You can also double-click Add in the Fields list to add a field above where you double-clicked.

   You can now complete the layout and input data fields. Depending on the Field Type selected, not every field in the window is required.



3. Specify the Field Name. The name must match the XML tag that brackets the data to capture. For example, if the data in the XML input source is <lastName>Smith</lastName>, enter lastName.

4. Select a Field Type from the following options:

Field Type	Description
Text	For fields containing characters or numbers not used in performing calculations.
Numeric	For fields containing numbers up to 15 digits. Big Numeric is the preferred selection for numeric fields, but in some situations, Numeric may be more efficient. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Big Numeric	For fields containing numbers. This is the preferred selection for numeric fields. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Date	For fields containing dates. Date separators are stripped out by the system during extraction.
Boolean	For fields representing true or false values.

5. Do one of the following:
   - If the field type selected in step 4 was Numeric or Big Numeric, continue to step 6.
   - If the field type selected in step 4 was Date, skip to step 7.
   - If the field type selected in step 4 was Text or Boolean, skip to step 11.
6. Select a Format for Numeric or Big Numeric from the following options:

Format Type	Description
Default	Select Default if the input data does not contain non-numeric characters other than a decimal point.
Lenient	Select Lenient to specify a locale, strip out non-numeric characters, or indicate that parentheses enclose negative numbers. For more information on how to enter a parsing pattern, see step 8.

7. Select a Date Format from the following options:

Format Type	Description

ISO 8601	For date with a user–defined format (a date format other than ISO 8601 or YY/MM), enter a valid format.
	
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	`y` `Year`
	`M` `Month`
	`d` `Day of the month`
	`k` `Hour in day (1-24)`
	`H` `Hour in day (0-23)`
	`h` `Hour in am/pm (1-12)`
	`K` `Hour in am/pm (0-11)`
	`m` `Minute in hour`
	`s` `Second in minute`
	`D` `Day in year`
	Examples of user-defined date formats are:
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	Examples of user-defined time formats are:
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

YY/MM	Date is in the format YY/MM, where YY is the last two digits of the year and MM is the two digits representing the month. Examples of dates in this format are 07/01, 97/12, and 06/11.
User-Defined	Select if the date format contains formatting characters other than hyphens or colons (ISO 8601 compliant dates). See step 9 for more information on how to enter a user-defined format in the Format Value field.

8. Optionally, for Numeric, Big Numeric, or Date field types, specify a parsing pattern or locale in the adjacent Format Value field. Select one of the following options:

Format Value	Description
Numeric or Big Numeric with a lenient format	Enter p: followed by a parsing pattern. For example, if the input data contains negative numbers enclosed in parentheses, and has four digits before the decimal and two digits after the decimal, the parsing pattern is P:0000.00;(#). Go to the Java Web site at http://java.sun.com/j2se/1.4.2/docs/api/java/text/DecimalFormat.html for valid parsing syntax.
User-defined date format	If the date field format is user-defined, specify a valid format. The following list shows the user-defined date formatting syntax. All values are case- sensitive. `y` Year `M` Month `d` Day of the month `k` Hour in day (1-24) `H` Hour in day (0-23) `h` Hour in am/pm (1-12) `K` Hour in am/pm (0-11) `m` Minute in hour `s` Second in minute `D` Day in year Examples of user-defined date formats are: `yyyy/MM/dd` 2007/11/25 `yyMMdd` 071125 `yy/MM/dd` 07/11/25 Examples of user-defined time formats are: `HH:mm:ss` 06:05:30 `kk:mm` 24:00

9. For Numeric or Big Numeric field types, specify the number of Decimal Positions.

10. Specify Decimal Handling to round or truncate the input data to the number of decimal places specified in step 9.
    - Rounding Example—If the number of decimals selected is two, then the number 34.255 is rounded to 34.26.
    - Truncating Example—If the number of decimals selected is two, then the number 34.255 is truncated to 34.25.
11. Specify whether the field Occurs once or multiple times in the input file.
12. For the Location, specify the XML tag bracketing the field, if one exists. Otherwise, leave this field blank.

    Location is an XPath expression fragment referring to an element within the document structure. It potentially identifies multiple instances of data that data sources using this layout should return.

Advanced Options

The remaining Input Data fields are advanced options. Click Advanced Options to show the remaining fields.

13. The Encoding Type for the format of the input data to capture is Text, by default.
14. The Implied Decimal Position field is optional and indicates the implied location of the decimal. This information applies only to Text or Numeric encoded data that does not physically contain a decimal character.
15. Use On Extraction Error to specify how the system will respond if the input data is missing or does not match the specified encoding type or format/pattern. Select a response from the following list of options:

Option	System Response
Allow Capture Process Failure	Stop processing and report a capture processing error.
Substitute Literal	Use an error value of your choice and assign the value if an extraction error occurs.
Substitute Null	Use Null in place of the value that could not be captured.

16. Error Value is available if Substitute Literal was selected in the previous step. Specify a default value to use if an extraction error occurs. For a date field, enter a date in ISO format.

17. Trim Blanks is available if the specified field type selected is Text or Boolean. Specify if the leading and trailing blank characters should be truncated.
18. Case Format is available if the field type selected is Text. Specify how to convert the text of the case of the characters:

Select	Description
As Is	Does not convert the case of the text.
Lower	Converts the case of the text to all lower case.
Uppercase	Converts the case of the text to all upper case.

19. Click OK.

    The lower pane displays the XML Layout with the name and type of the field just added.
20. Repeat step 2 through step 19 to add another field.
21. Click Save after adding a field.

Add a Group

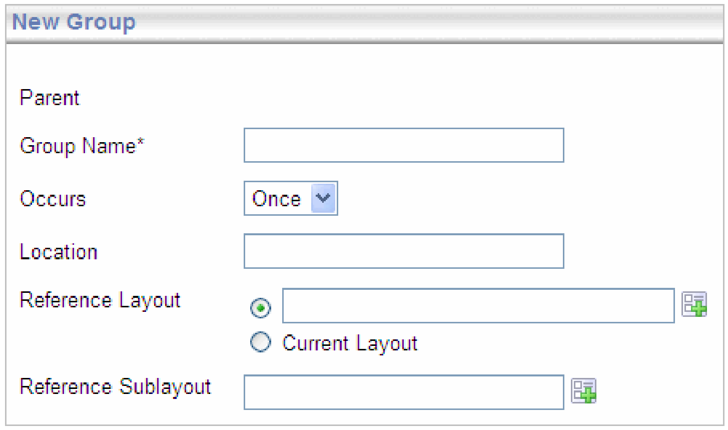
An XML layout can contain fields that belong together, such as an element with multiple attributes or multiple sub-elements. You can define a group for these fields and then add the fields to the group. To facilitate data capture, define a group for a set of fields that occurs once; define a sublayout for a set of fields that occurs multiple times (see “Add a Sublayout” on page 78).

To add a group, complete the following steps:

1. Create an XML layout or select an XML layout that already exists.
2. Click the Fields tab.
3. Select the location where you want to insert the group and click Add > Group. The system inserts the new group above the selected location.

   You can also double-click Add in the Fields list to insert a group above where you double-clicked.

Use the New Group page to create the new group.



4. Specify Group Name. This must be a unique name that has not been used for a field, group, or sublayout in the current layout.
5. If the group occurs multiple times, define a sublayout instead. See “Add a Sublayout” on page 78.
6. If there is an XML tag bracketing the group, specify the tag in the Location field.

   Location is an XPath expression fragment referring to an element within the document structure. It potentially identifies multiple instances of data that data sources using this layout should return.
7. For the Reference Layout, select an existing layout to reference that defines the data structure of the group. Select Current Layout to reuse the data structure of the current layout or a sublayout within the current layout.
8. If a sublayout in the reference layout defines the data structure of the group, select the appropriate sublayout as the Reference Sublayout. This sublayout narrows the fields available for capture. Choose Many for the Occurs option, above, if you are referencing the current layout and the referenced layout is a parent of the group you are defining.
9. Click OK.
10. To add fields to the group, see “Add a Field” on page 80.

Editing an XML Layout

When you are working with any type of layout, you can perform any of the following tasks:

- Edit a sublayout, record type, group, or field, depending on the layout type.
- Remove a sublayout, record type, group, or field, depending on the layout type.
- Add an advanced path or URL.
- Duplicate the layout.
- Remove the layout.
- Test the layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

6

Database Layouts

A database layout defines the data in any relational database for use by Assure DQ. The data can be accessed by a standard database connection. A standard connection can be either a direct JDBC™ connection or a JNDI™ name that identifies the JDBC connection.

To create a database layout, you need to:

- Identify the location of the database
- Provide instructions via an SQL® query
- Automatically generate the layout

Information Needed Before You Start

If you plan to identify the database by its JNDI (Java Naming and Directory Interface) name, seek the assistance of your database administrator for this information.

If you plan to identify the database by a JDBC (Java Database Connectivity) connection, your database administrator must provide the following:

- The name and full path of the driver
- The name of the server on which the database resides
- The default port number
- The database name
- Additionally, it is recommended that the database administrator creates a User ID and Password with group permission for Assure DQ, rather than relying on individual IDs and passwords.

If you are extracting data, you need an SQL query statement that defines which fields you want to retrieve. If you do not know how to write the appropriate query, ask your database administrator for help. Test the SQL statement before defining the database layout.

Database File Example

The example below displays a brief sample of a database:

PROCESSTATUSOID	PROCESSNAME	STARTDTTM	ENDDTTM	COMMENTTXT
437437898943	TransactionTLL	3/23/2010 11:32:36	3/23/2010 11:32:36	OK
437437898943	TransactionTLP	3/23/2010 11:32:36	3/23/2010 11:32:36	Not OK
437437898956	TransactionTLL	3/23/2010 11:32:36	3/23/2010 11:32:36	OK

Performing SQL Queries

When you define a database layout, you will see an SQL Query tab. Copy and paste the SQL Query for capturing data to use in controls into the text box. Use standard SQL syntax. Do not use semicolons in the SQL statement.

Use question marks wherever you would like to include dynamic parameters in the query. Then, click Advanced SQL Query to name and assign default values to these parameters. You can substitute data values for these parameters at runtime, when the control point captures or translates data.

Advanced SQL Queries

Advanced SQL queries let you use dynamic parameters in the database query. The value of a dynamic parameter is acquired when the control point is executed. Values for the dynamic parameters can be acquired from properties files or runtime parameters. An advanced SQL query can be applied to defining a database layout.

Potential applications for advanced SQL queries are:

- Selecting data that has been updated since the last capture.
- Selecting data based on parameters (runtime values) specified when the control point executes.
- Performing dynamic translation by substituting the input values to translate in the SQL query at runtime.

For more information, see the online Help.

Field Types

Before you begin to build the layout, analyze the input data to determine the locations and types of data.

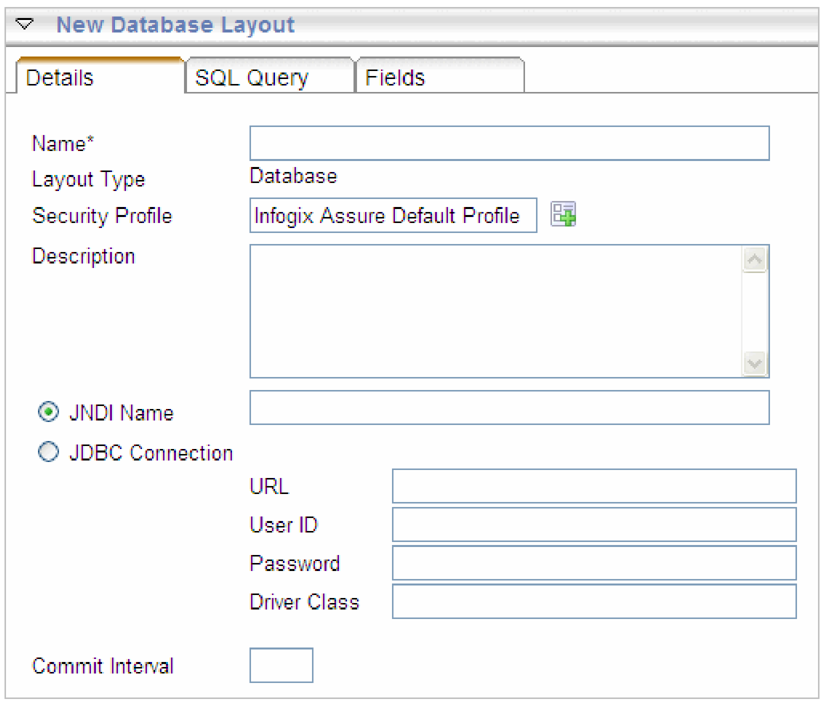
Depending on the options selected on the Details tab, a database layout can contain one or more of the following:

- **Field**—A field holds a single piece of information. You can capture as many fields in a record as you need. You may decide to only capture four fields, or you may decide to capture all the fields in the records. You can determine this after analyzing the input data. See “Editing a Database Layout” on page 98.
- **Sublayout**—Sublayouts define the structure of data according to another layout type (fixed, XML, delimited, ISO 8583, or Java Object). Sublayouts can also be used to define fields that occur multiple times in the input file to make it easier to extract the data. See “Add a Sublayout” on page 97.

Creating a Database Layout

After you analyze the data and determine what data to capture, you are ready to create a database layout. To create a database layout, complete the following steps:

1. Click Rules > Layouts.
2. Click New Layout > Database.
   You can now complete the details and add fields for the layout in the New Database Layout pane.



Completing the Database Layout Details

1. Specify a Name to reflect the content and type of data source.

Tip	After the layout is saved, you cannot edit the layout name.

2. The system displays the Security Profile field only for a rules writer with security manager or security administrator authority. The security profile determines the permissions for this layout.
   If you have authority, you can specify the default security profile or a different profile.

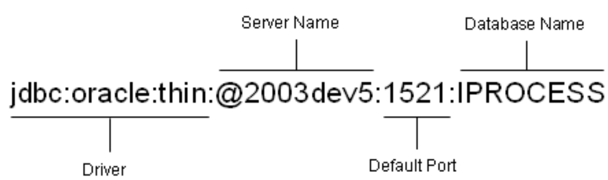
3. Specify a Description of the file and the data you plan to capture.

   This information is useful to further identify the input source and the captured data.

4. Select one of the following options:

   - JNDI Name—In the adjacent field, specify the JNDI name of the data source.
     The format for JBOSS® is java:MyDatabaseDS. The format for WebSphere® is MyDatabaseDS.
     Do not specify a JNDI name for data sources accessed by the client.
   - JDBC Connection—In the adjacent fields, specify the URL, User ID, Password, and Driver Class.

     The example below provides a breakdown of how to specify the content of the URL:

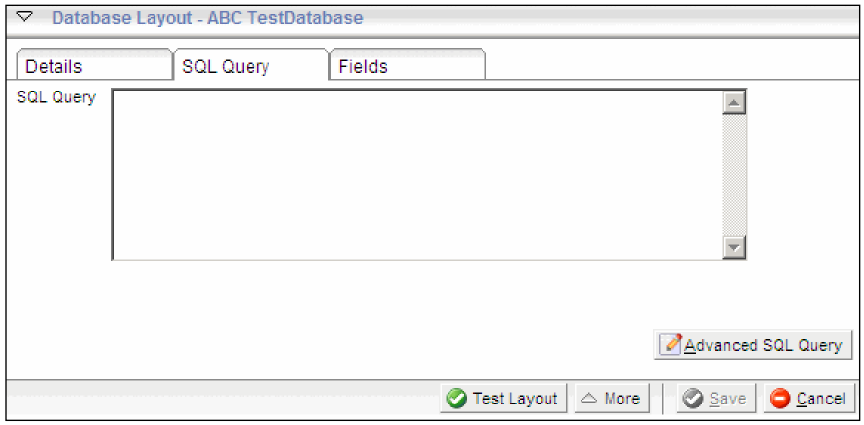


5. If your system is configured to offer the Commit Interval option, you can specify the number of rows to read before releasing database read locks.

   The default behavior is to let the database keep any read locks on the data read until the entire result set is processed. However, for large databases, you may want to specify a finite number of rows to read and then commit. This allows the database to release accumulated read locks periodically.

   Consult your database administrator to determine an appropriate number of rows to specify. For information on how to enable the database commit interval option, see the *Assure DQ System Administrator's Guide*.

6. Click Save and then click the SQL Query tab.



7. In the SQL Query field, specify a query to request the fields you want to include in the layout. You can copy and paste the query. Use standard SQL syntax and do not use semicolons.
8. Use question marks wherever you want dynamic parameters in the query. Then, click Advanced SQL Query to name and assign default values to these parameters. You can substitute data values for these parameters at runtime when capturing data. For more information on creating advanced SQL queries, see the online Help.

Tip Write and test the SQL Query first.

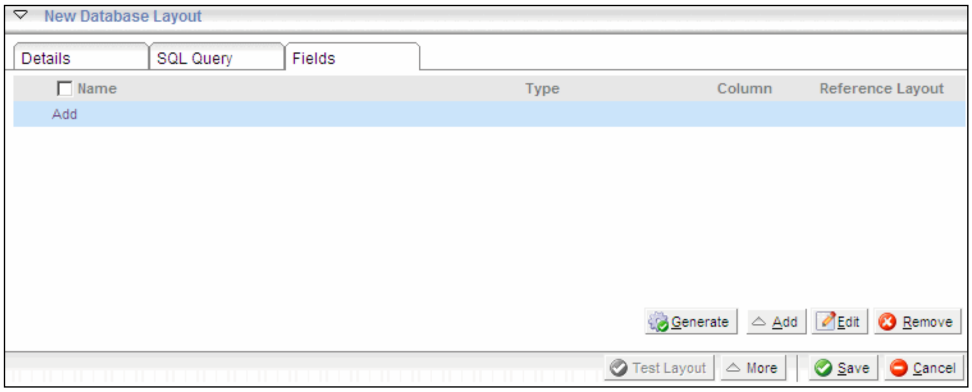
Add a Field

A field holds a single piece of information. You can add fields in the Database layout, or you can automatically generate a layout.

Do not define the fields on the Fields tab if you want to generate the layout. Proceed to “Generate a Database Layout Automatically” on page 99.

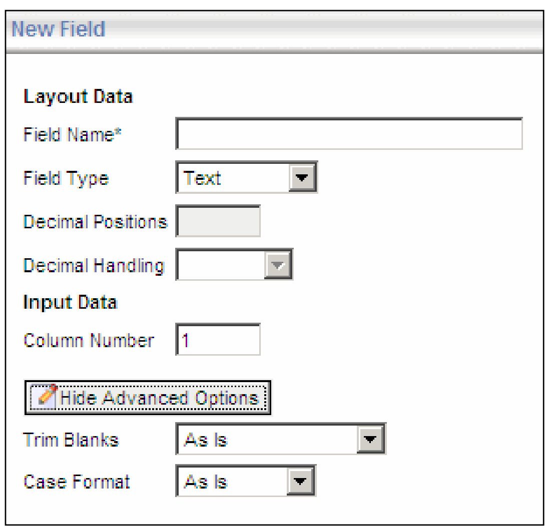
To add a database layout field, complete the following steps:

1. In the Database Layout pane, click the Fields tab.



2. Select the location where you want to insert the field and click Add > Field. The system inserts the new field above the selected location. You can also double-click Add in the Fields list to insert a field above where you double-clicked.

   Complete the Layout and Input Data fields. Depending on the field type selected, not every field in the window needs to be completed.



3. Specify the Field Name. The name can be a maximum of 40 characters and can contain letters, numbers, and underscores.

4. Select a Field Type from the following options:

Field Type	Description
Text	For fields containing characters or numbers not used in performing calculations.
Numeric	For fields containing numbers up to 15 digits. Big Numeric is the preferred selection for numeric fields, but in some situations, Numeric may be more efficient. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Big Numeric	For fields containing numbers. This is the preferred selection for numeric fields. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Date	For fields containing dates. Date separators are stripped out by the system during extraction.
Boolean	For fields representing true or false values.

5. For Numeric or Big Numeric field types, specify the number of Decimal Positions.
6. Specify Decimal Handling to round or truncate the input data to the number of decimal places specified in step 5.
   - Rounding Example—If the number of decimals selected is two, then the number 34.255 is rounded to 34.26.
   - Truncating Example—If the number of decimals selected is two, then the number 34.255 is truncated to 34.25.

Completing the Input Data Section

7. Specify the Column Number containing the layout field in the database query results. The first column is column 1.

Advanced Options/Hide Advanced Options

The remaining Input Data fields are advanced options. Click Advanced Options to show the remaining fields. Click Hide Advanced Options to hide the remaining fields.

8. Trim Blanks is available if the specified field type selected is Text or Boolean. Specify if the leading and trailing blank characters should be truncated.
9. Case Format is available if the field type selected is Text. Specify how to convert the text of the case of the characters:

Select	Description
As Is	Does not convert the case of the text.
Lower	Converts the case of the text to all lower case.
Uppercase	Converts the case of the text to all upper case.

10. Click OK.

    The lower pane displays the layout with the name and type of the field just added.
11. Repeat step 2 through step 10 to add another field.
12. Click Save after adding a field.

Add a Sublayout

A sublayout in a database layout can be used to:

- Define a fixed number of bytes according to another layout (fixed, delimited, XML, ISO 8583, or Java Object).
- Define a portion of a record according to another database layout (to allow the reuse of common structures).
- Contain groups of fields that occur multiple times in the source data file. Using sublayouts makes it easier to extract the data.

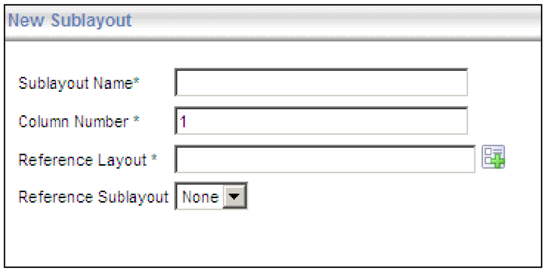
Note Before you use a sublayout to define an entirely separate set of data stored in a single field, define a layout for this data. You can then refer to that layout when you create the sublayout.

To add a sublayout, complete the following steps:

1. Create a database layout or select a database layout that already exists.
2. Click the Fields tab.
3. Select the location where you want to insert the sublayout and click Add > Sublayout. The system inserts the new sublayout above the selected location.

   You can also double-click Add in the Fields list to insert the sublayout above where you double-clicked.

Use the New Sublayout page to create the new sublayout.



4. Specify the Sublayout Name.
5. Specify the Column Number of the field in the record. The first column is column 1.
6. Specify a Reference Layout. This is a previously created layout that defines the data in the field specified in step 3 through step 5. You cannot reference a layout that contains multiple record types.
7. Optionally, specify a Reference Sublayout. This is a sublayout in the reference layout that defines the data. Use a sublayout to narrow the fields available for capture. Sublayouts that contain a reference layout are not available for selection.
8. Click OK.

Editing a Database Layout

When you are working on a database layout, you can:

- Generate a Database Layout Automatically

When you are working on any type of layout, you can perform any of the following tasks:

- Edit a sublayout, record type, group, or field depending on the layout type.
- Remove a sublayout, record type, group, or field depending on the layout type.
- Add an advanced path or URL.
- Duplicate a layout.
- Remove a layout.
- Test a layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

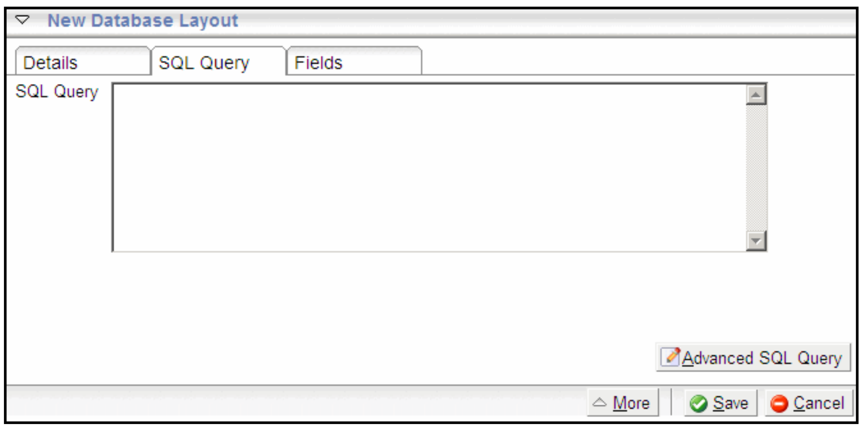
Generate a Database Layout Automatically

You can automatically generate the fields for a database layout. You must specify either a JNDI name or a JDBC connection on the Details tab and then enter an SQL query to request the fields you want to include in your layout on the SQL Query tab.

Tip	You cannot generate the layout fields if complex queries exist on the SQL Query tab.

To generate a database layout automatically, complete the following steps:

1. On the Details tab, specify either a JNDI name or JDBC connection information.
2. Click the SQL Query tab.



3. In the SQL Query text box, specify the query to request the field you want to include in your layout. If the SQL query is complex, you will not able to generate a layout.
4. Click the Fields tab.

5. If any fields are defined on this tab, select each field and click Remove to delete the fields.

   The option to generate a layout is not available if layout fields are defined.
6. Click Generate.

   Assure DQ generates the layout, and the New Database Layout pane displays with the fields generated from the SQL Query.
7. If you need to edit any of the fields in the generated layout, refer to "Editing a Database Layout" on page 98 for field layout information.

7

Microsoft Excel Layouts

A Microsoft Excel layout defines data in a Microsoft Excel spreadsheet for use by Assure DQ. The data can reside in a single worksheet or in contiguous worksheets.

Before you create a layout, examine the spreadsheet to determine the following information. Keep this information handy as you define the layout.

- What is the specific data that you want to capture?
- Which worksheets contain the data that you require? If you require data from discontinuous worksheets, you will have to specify a range that includes the required worksheets.
- How are the worksheets named?
- How many header rows does the spreadsheet have? You must specify the number so that Assure DQ will omit the data in the header rows during the extraction.
- Compare the amount of data to capture against the total amount of data in the input source. If your control point already uses most of the data, you may want to capture all data to maximize reusability for this layout.
- If there are errors when Assure DQ extracts the data, how do you want to handle the errors?

Microsoft Excel File Example

The following example shows a typical Microsoft Excel spreadsheet:

	A	B	C	D	E	F	G	H	I	J	K
1	Lname	Fname	Address	City	State	ZIP	Units Sold	Sales Date	Sales	Commission	Total
2	Wilson	Bernie	1915 Windy Lane	Winfield	IL	60190	25	1/2/2008	10000	1000	11000
3	Wilson	Bernie	1915 Windy Lane	Winfield	IL	60190	10	1/7/2008	5000	500	5500
4	Wilson	Bernie	1915 Windy Lane	Winfield	IL	60190	2	1/10/2008	1500	150	1650
5	Wilson	Bernie	1915 Windy Lane	Winfield	IL	60190	5	1/20/2008	2500	250	2750
6	Wilson	Bernie	1915 Windy Lane	Winfield	IL	60190	50	1/20/2008	25000	2500	27500
7	Wilson	Bernie	1915 Windy Lane	Winfield	IL	60190	1	1/21/2008	750	75	825
8	Park	Sally	123 Main Street	Wheaton	IL	60187	30	1/11/2008	20000	2000	22000
9	Park	Sally	123 Main Street	Wheaton	IL	60187	10	1/16/2008	5000	500	5500
10	Park	Sally	123 Main Street	Wheaton	IL	60187	5	1/16/2008	2500	250	2750
11	Park	Sally	123 Main Street	Wheaton	IL	60187	30	1/16/2008	20000	2000	22000
12	Burns	George	989 Mocking Bird Lane	Glen Elyn	IL	60189	5	1/5/2008	2500	250	2750
13	Burns	George	989 Mocking Bird Lane	Glen Elyn	IL	60189	5	1/23/2008	2500	250	2750
14											
15											
16											

Sheet1 Sheet2 Sheet3

Guidelines for Defining a Microsoft Excel Layout

To create a Microsoft Excel layout, you must first specify details about the input source. The detail information includes the name and description of the layout and provides information about the location of the input data. Next, you define the fields for the layout.

To define a layout for a spreadsheet, you must identify the header rows, columns, and worksheets. The columns in the spreadsheet represent the fields in your layout and the rows represent the records, or the data to capture.

If you have a sample spreadsheet on your hard drive or on the Assure DQ server, you can automatically generate a layout and then edit individual fields as needed.

When you define a layout for a Microsoft Excel spreadsheet, consider the following items:

- Columns are identified by sequential letters. The first column is A, the second column is B, and so forth.
- You must identify any header rows in the spreadsheet. Header rows are omitted when the data is extracted.
- An individual worksheet can be identified by number, name, or name pattern. You can also identify a range of worksheets. See Examples of Naming Worksheet Ranges below.
- If you include more than one worksheet in your layout, the captured information in each worksheet must be similar. All data in column A must be the same field type, such as text. The rows in each column must represent the same type of data.
- If you have access to a sample spreadsheet, you can choose to automatically generate a layout rather than define the fields. The automatically generated layout lists the fields on the specified worksheets, and you can then edit these fields as required.

Worksheet Identifier Examples

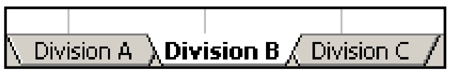
Input data from a Microsoft Excel spreadsheet can be on one or more worksheets. When you define the layout, you specify the worksheet or worksheets that contain the data in the Worksheet Identifier(s) field. If you specify multiple worksheets, the worksheets must be contiguous.

An individual worksheet can be identified by a number or name. A range of worksheets can be identified by a number range, names, or a name pattern.

- Use a hyphen (-) to separate a range of worksheet numbers.

- Use a comma (,) to separate worksheet names.
- Use a period (.) for a single character in a name pattern.
- Use an asterisk (*) for any continuous stream of characters in a name pattern.

In the example below, to retrieve data from worksheet Division B, specify 2 (worksheet number), or specify Division B (worksheet name) in the Worksheet Identifier(s) field.



To retrieve data from worksheets Division A, Division B, and Division C, specify 1-3 (a number range), or specify Division A, Division B, Division C (names), or specify Division * (a name pattern) in the Worksheet Identifier(s) field.

In the example below, to retrieve data from all three worksheets, specify TX* in the Worksheet Identifier(s) field.

In the example below, to retrieve data from all four worksheets, specify Div. in the Worksheet Identifier(s) field.

In the example below, to retrieve data from Div1TX, Div2TX, and Div3TX worksheets, specify Div.TX in the Worksheet Identifier(s) field.

Fields Types

Before you begin to build the layout, analyze the input data to determine the locations and types of data. Depending on the options selected on the Details tab, a Microsoft Excel layout can contain one or more of the following:

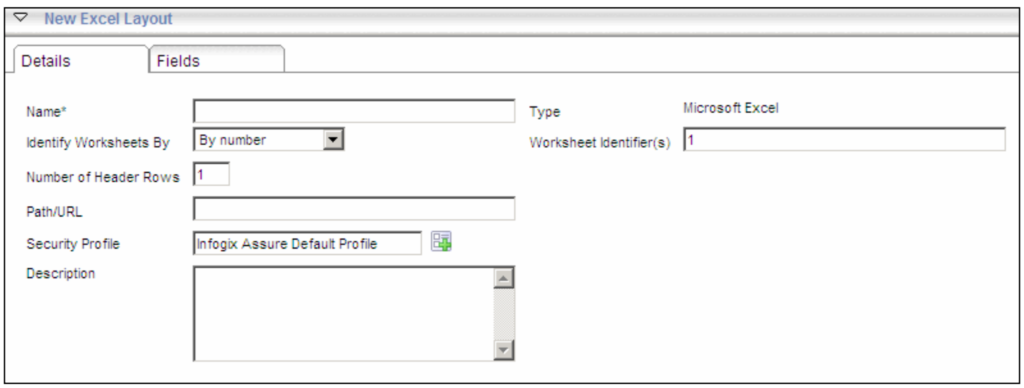
- **Field**—A field holds a single piece of information. You can capture as many fields in a record as you need. You may decide to only capture four fields, or you may decide to capture all the fields in the records. You can determine this after analyzing the input data. See “Add a Field” on page 105.

- **Sublayout**—Sublayouts define the structure of data according to another layout type (fixed, XML, or delimited). Sublayouts can also be used to define fields that occur multiple times in the input file to make it easier to extract the data. See “Add a Sublayout” on page 111.

Creating a Microsoft Excel Layout

To create a Microsoft Excel Layout, complete the following steps:

1. Click Rules > Layouts.
2. Click New Layout > Microsoft Excel.
   You can now complete the details and add fields for the layout in the New Excel Layout pane.



Completing the Microsoft Excel Layout Details

1. Specify a Name to reflect the content and type of data source.

Tip	After the layout is saved, you cannot edit the layout name.

2. Specify Identify Worksheets By using one of the following options:
   - By number, for a single worksheet.
   - By number range, for a range of contiguous worksheets.
   - By names, to identify the worksheets by name.
   - By name pattern, to use a wildcard character.
3. In the Worksheet Identifier(s) field, specify the worksheet or worksheets for data input based on your selection in the Identify Worksheets By field.

For information on how to specify worksheet(s), see “Worksheet Identifier Examples” on page 102.

Identify Worksheets By	Worksheet Identifier(s)
By number	The number of the worksheet page.
By number range	The range of worksheet numbers, separated by a hyphen.
By names	The names of the worksheets, separated by a comma.
By name pattern	The names of the worksheets, using an asterisk (*) as a wildcard or a period (.) to indicate a single character.

4. Specify the Number of Header Rows in the spreadsheet.

   Assure DQ ignores the data in header rows during the extraction process.
5. Optionally, specify a Path/URL for this layout.

   If you do not specify the path on the Details tab, you can specify the path at the time you run the control point.

   To automatically generate a layout, the specified path must be the full path, not an http or ftp URL.
6. The system displays the Security Profile field only for a rules writer with security manager or security administrator authority. The security profile determines the permissions for this layout.

   If you have authority, you can specify the default security profile or a different profile.
7. Specify a Description of the file and the data you plan to capture.

   This information is useful to further identify the input source and the captured data.
8. Optionally, click Save to save the layout.

   You are now ready to specify the layout fields.

Add a Field

You can define the fields for the Microsoft Excel layout, or, if a sample spreadsheet is on your hard drive or is accessible by the Assure DQ server, you can automatically generate a layout.

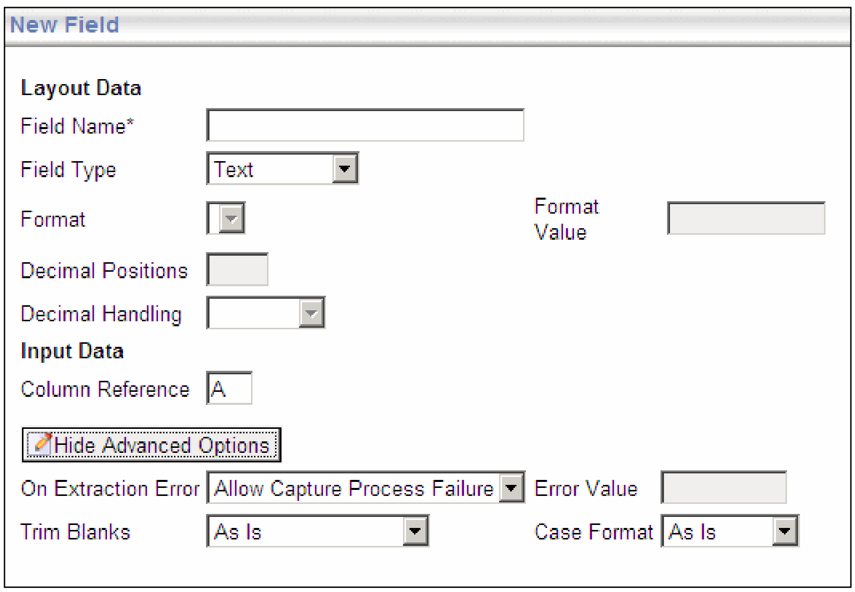
Do not define the fields on the Fields tab if you want to generate the layout. Proceed to “Generate a Microsoft Excel Layout Automatically” on page 113.

To add a field to a layout, complete the following steps:

1. In the Excel Layout pane, click the Fields tab.
2. Select the location where you want to insert the field and click Add > Field. The system inserts the new field above the selected location.

   You can also double-click Add in the Fields list to insert a field above where you double-clicked.

   You can now complete the Layout and Input Data fields. Depending on the field type selected, not every field in the window needs to be completed.

3. Specify the Field Name. The name can be a maximum of 40 characters and can contain letters, numbers, and underscores.

4. Select the Field Type from the following options:

Field Type	Description
Text	For fields containing characters or numbers not used in performing calculations.
Numeric	For fields containing numbers up to 15 digits. Big Numeric is the preferred selection for numeric fields, but in some situations, Numeric may be more efficient. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Big Numeric	For fields containing numbers. This is the preferred selection for numeric fields. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Date	For fields containing dates. Date separators are stripped out by the system during extraction.
Boolean	For fields representing true or false values.

5. Do one of the following:
   - If the field type selected in step 4 was Numeric or Big Numeric, continue to step 6.
   - If the field type selected in step 4 was Date, skip to step 7.
   - If the field type selected in step 4 was Text or Boolean, skip to step 11.
6. Select a Format for Numeric or Big Numeric from the following options:

Format Type	Description
Default	Select Default if the input data does not contain non-numeric characters other than a decimal point.
Lenient	Select Lenient to specify a locale, strip out non-numeric characters, or indicate that parentheses enclose negative numbers. For more information on how to enter a parsing pattern, see step 8.

7. Select a Format for Date from the following options:

Format Type	Description

ISO 8601	For Date with a user–defined format (a date format other than ISO 8601 or YY/MM), enter a valid format.
	
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	
	`y` Year
	`M` Month
	`d` Day of the month
	`k` Hour in day (1-24)
	`H` Hour in day (0-23)
	`h` Hour in am/pm (1-12)
	`K` Hour in am/pm (0-11)
	`m` Minute in hour
	`s` Second in minute
	`D` Day in year
	
	Examples of user-defined date formats are:
	
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	
	Examples of user-defined time formats are:
	
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

YY/MM	Date is in the format YY/MM, where YY is the last two digits of the year and MM is the two digits representing the month. Examples of dates in this format are 07/01, 97/12, and 06/11.
User Defined	Select if the date format contains formatting characters other than hyphens or colons (ISO 8601 compliant dates). See step 9 for more information on how to enter a user-defined format in the Format Value field.

8. Optionally, for Numeric, Big Numeric, or Date field type, specify a parsing pattern or locale in the adjacent Format Value field from the following options:

Format Value	Description
Numeric or Big Numeric with a lenient format	Enter p: followed by a parsing pattern. For example, if the input data contains negative numbers enclosed in parentheses, and has four digits before the decimal and two digits after the decimal, the parsing pattern is P:0000.00;(#). Go to the Java Web site at http://java.sun.com/j2se/1.4.2/docs/api/java/text/DecimalFormat.html for valid parsing syntax.

User-defined date format	If the date field format is user-defined, specify a valid format.
	
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	
	`y` Year
	`M` Month
	`d` Day of the month
	`k` Hour in day (1-24)
	`H` Hour in day (0-23)
	`h` Hour in am/pm (1-12)
	`K` Hour in am/pm (0-11)
	`m` Minute in hour
	`s` Second in minute
	`D` Day in year
	
	Examples of user-defined date formats are:
	
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	
	Examples of user-defined time formats are:
	
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

9. The Decimal Positions option is available only for the Numeric or Big Numeric field types. Specify the number of decimal places.

10. The Decimal Handling option is available only for Numeric or Big Numeric field types. Specify whether to round or truncate the input data to the number of decimal places specified in step 9.
    - Rounding Example—If the number of decimals selected is two, then the number 34.255 is rounded to 34.26.
    - Truncating Example—If the number of decimals selected is two, then the number 34.255 is truncated to 34.25.

Completing the Input Data Section

11. The Column Reference field alphabetically increments, starting with A for the first column.

    You can override the value in this field to correspond with the column in your spreadsheet.

Advanced Options/Hide Advanced Options

The remaining Input Data fields are advanced options. Click Advanced Options to show the remaining fields. Click Hide Advanced Options to hide the remaining fields.

12. Use On Extraction Error to specify how the system will respond if the input data is missing or does not match the specified encoding type or format/pattern. Select a response from the following list of options:

Option	System Response
Allow Capture Process Failure	Stop processing and report a capture processing error.
Substitute Literal	Use an error value of your choice and assign the value if an extraction error occurs.
Substitute Null	Use Null in place of the value that could not be captured.

13. Error Value is available if Substitute Literal was selected in the previous step. Specify a default value to use if an extraction error occurs. For a date field, enter a date in ISO format.
14. Trim Blanks is available if the specified field type selected is Text or Boolean. Specify if the leading and trailing blank characters should be truncated.

15. Case Format is available if the field type selected is Text. Specify how to convert the text of the case of the characters:

Select	Description
As Is	Does not convert the case of the text.
Lower	Converts the case of the text to all lower case.
Uppercase	Converts the case of the text to all upper case.

16. Click OK.

    The lower pane displays the File Layout with the name and type of the field just added.
17. Repeat step 2 through step 16 to add another field.
18. Click Save after adding a field.

Add a Sublayout

A sublayout in a Microsoft Excel layout can be used to:

- Define a fixed number of bytes according to another layout (fixed, delimited, or XML).
- Contain groups of fields that occur multiple times in the source data file. Using sublayouts makes it easier to extract the data.

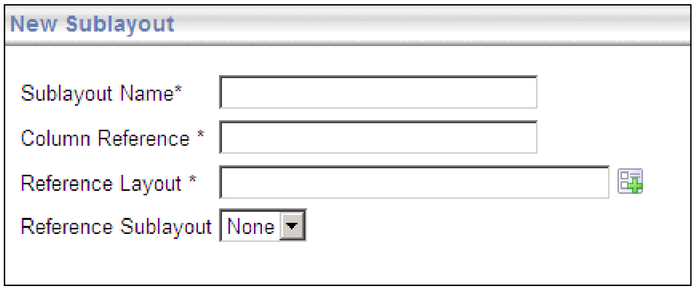
Note Before you use a sublayout to define an entirely separate set of data stored in a single field, define a layout for this data. You can then refer to that layout when you create the sublayout.

To add a sublayout, complete the following steps:

1. Create a Microsoft Excel layout or select a Microsoft Excel layout that already exists.
2. Click the Fields tab.
3. Select the location where you want to insert the sublayout and click Add > Sublayout. The system inserts the new sublayout above the selected location.

   You can also double-click Add in the Fields list to insert a sublayout above where you double-clicked.

Use the New Sublayout page to create the new sublayout.



4. Specify the Sublayout Name.
5. Specify the Column Reference to indicate the column letter of the field in the record.
6. Specify a Reference Layout. This is a previously created layout that defines the data in the column specified in step 3 through step 5. You cannot reference a layout that contains multiple record types.
7. Optionally, specify a Reference Sublayout. This is a sublayout in the reference layout that defines the data. Use a sublayout to narrow the fields available for capture. Sublayouts that contain a reference layout are not available for selection.
8. Click OK.

Editing a Microsoft Excel Layout

When you are working on a Microsoft Excel layout, you can:

- Generate a Microsoft Excel Layout Automatically

When you are working on any type of layout, you can perform any of the following tasks:

- Edit a sublayout, record type, group, or field, depending on the layout type.
- Remove a sublayout, record type, group, or field, depending on the layout type.
- Add an advanced path or URL.
- Duplicate a layout.
- Remove a layout.
- Test a layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

Generate a Microsoft Excel Layout Automatically

If a sample spreadsheet resides on your hard drive or on the Assure DQ server, you can automatically generate a layout.

You can later edit the fields in the generated layout. For example, your spreadsheet represents the sales picture for the ABC company. Each worksheet or tab represents a region. The first tab represents the North region and column A is titled North YTD sales. The data in each row represents the YTD sales for a state in that region. You can define a layout field called YTD sales to represent the YTD sales for the whole company. If you automatically generate the layout, the first field is North YTD sales. You can then edit this field to become the YTD sales for the ABC company.

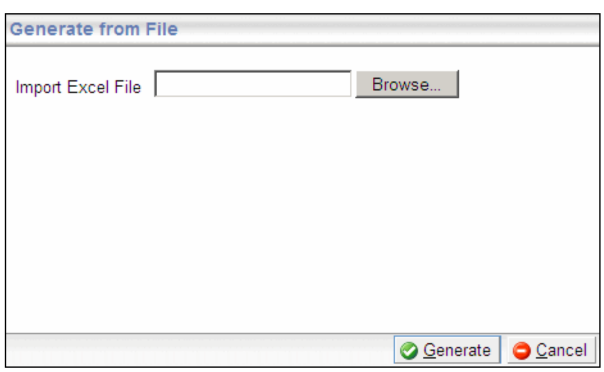
Tip The Generate button is not available after you define fields for the layout.

To generate a layout automatically, complete the following steps:

1. Click Rules > Layouts.
2. Create a Microsoft Excel layout or select a Microsoft Excel layout that already exists.
3. In the Excel Layout pane, click the Fields tab.

Note If there are sublayouts or fields in the Fields list, delete all items.

4. Click Generate and select one of the following options:
   - From Path/URL if you specified a Path/URL on the Details tab. If the file is accessible from the server, and the Path/URL specifies the full path to access the file, the system generates the layout.
   - From File to create a layout based on a file on your hard drive or a network drive. The system then prompts you to browse for the file.



a. Click Browse and navigate to the file to use.
b. Click Generate. The system generates the layout.

5. If you need to edit any of the fields in the generated layout, refer to “Add a Field” on page 105 for field layout information.

8

ISO 8583 Layouts

ISO 8583 Financial Transaction Card Originated Messages is the standard for systems that exchange electronic transactions made by cardholders using payment cards. ISO 8583 defines a message format and a communication flow so different systems can exchange these card-based transactions. Transactions made at Automated Teller Machines use ISO 8583 at some point in the communication chain. Both MasterCard® and Visa® networks base their authorization communications on the ISO 8583 standard.

Note	The ISO 8583 option is available only if you are licensed for this feature.

An ISO 8583 message contains the following parts:

- Message type indicator (MTI)
- One or more bitmaps, indicating which data elements are present
- Data elements, which are the fields of the message

Message Type Indicator

The message type indicator (MTI) is a four-digit numeric field that classifies the high level function of the message. The following is an example of an MTI:

```
0xxx  –> version of ISO 8583 (1987 version)
x1xx  –> class of the Message (Authorization Message)
xx1x  –> function of the Message (Request Response)
xxx0  –> who began the communication (Acquirer)
```

Position one of the MTI specifies what version of the ISO 8583 standard is being used to transmit the message. Position two specifies the overall purpose of the message, such as the authorization message. Position three specifies the message function that defines how the message flows, for example, request or request response. Position four defines the location of the message source within the payment change, for example, acquirer or issuer.

Bitmaps

Within ISO 8583, a bitmap is a field or subfield in a message that indicates which other data elements are present in the message. A message contains at least one bitmap that indicates which Data Elements, ranging from one to 64, are present. There may also be a second and third bitmap used to indicate the presence or absence of fields.

Data Elements

Data elements are the individual fields carrying the transaction information. Each data element has a specific meaning and format defined in the data dictionary. Additional data elements can be defined using specific dictionaries. Assure DQ provides the MasterCard dictionary.

Field Types

Before you begin to build the layout, analyze the input data to determine the location and types of data. Depending on the options selected on the Details tab, an ISO 8583 layout can contain one or more of the following:

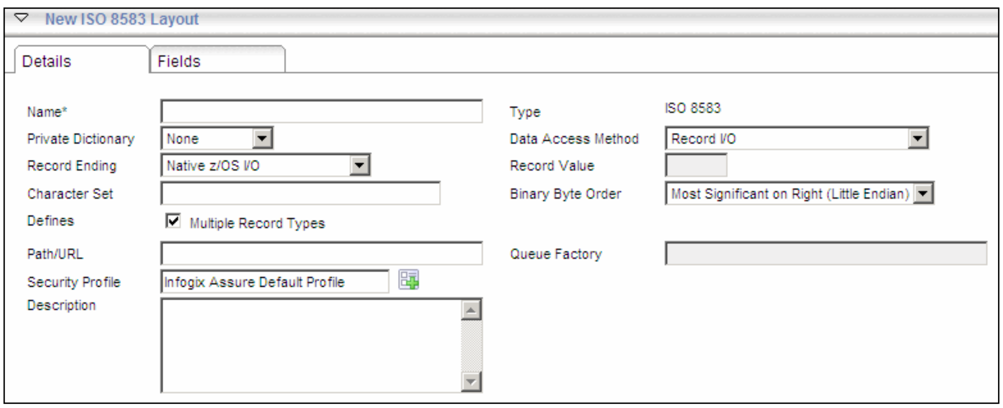
- **Field**—A field holds a single piece of information. You can capture as many fields in a record as you need. You may decide to only capture four fields, or you may decide to capture all the fields in the records. You can determine this after analyzing the input data. See "Add a Field" on page 120.
- **Group**—A fixed layout can contain repetitive fields. For these fields, you can define a group rather than define each field separately. For example, auto insurance data might have a group named Driver and the fields in that group are related to the driver, such as name, address, city, state, ZIP code, driver's license, and SSN. See "Add a Group" on page 126.
- **Record Type**—If the data in the input source is uniform in structure but represents more than one type of data, use record types to distinguish the different types of logical records. For example, an insurance company has a file with claim information about accident, home owner, and life insurance claims. A record type provides the ability to distinguish between the claim types. See "Add a Record Type" on page 127.

- **Sublayout**—Sublayouts define the structure of data according to another layout type (fixed, XML, or delimited) or another ISO 8583 layout. Sublayouts can also be used to define fields that occur multiple times in the input file to make it easier to extract the data. See “Add a Sublayout” on page 130.

Creating an ISO 8583 Layout

After you analyze the input data, complete the following steps to create an ISO 8583 layout.

1. Click Rules > Layouts.
2. Click New Layout > ISO 8583.
   You can now complete the details and add fields for the layout in the New ISO 8583 Layout pane.



Completing the ISO 8583 Layout Details

1. Specify a Name to reflect the content and type of data source.

Tip	After the layout is saved, you cannot edit the layout name.

2. Select a Private Dictionary from a list of available dictionaries, if applicable.

3. Select a Data Access Method from the following options:

Data Access Method	Description
Character/Byte Stream I/O	Data is byte or character data accessed by standard Java input methods. This is the default data access method.
Record I/O	Data is IBM or Micro Focus COBOL record-oriented input.
Networked Character/Byte Stream I/O	Data is input stream byte or character data accessed via URLs with protocols such as ftp or http.
API Data	Data is byte or character data supplied through an Application Program Interface (API).
JMS Message Queue	Data is byte or character data supplied through a JMS queue.

4. Select a record ending option.

   For data access methods other than Record I/O, select one of the following Record Ending options based on how individual records are physically defined in the file:

Record Ending Option	Description
Layout Defined	Records vary in length and record type. Records with non-varying length can be layout defined (equivalent to selecting fixed length, record length). A record type must be defined for each logical record type.
Message	For JMS Message Queue access when each message is a single record.

For the Record I/O data access method, select one of the following Record Ending options:

Record Ending Option	Description
Native z/OS I/O	Files with native, record oriented sequential or VSAM (virtual storage access method) z/OS data sets.
RDW 2	Mainframe files, downloaded to Windows or UNIX platforms, with records that begin with two-byte RDWs (record descriptor words).

Record Ending Option	Description
RDW 4	Mainframe files, downloaded to Windows or UNIX platforms, with records that begin with four-byte RDWs (record descriptor words).
RDW 8	Mainframe files, downloaded to Windows or UNIX platforms, with blocks that begin with four-byte BDWs (block descriptor words), followed by records that begin with four-byte RDWs (record descriptor words).
Micro Focus Variable Record	Micro Focus COBOL variable sequential files.

5. If your data is from a different platform, the data may be encoded using a different character set than the platform on which Assure DQ is installed. To accommodate this situation, specify the conversion type in the Character Set field. If necessary, Assure DQ will convert the data to a compatible character set during control point execution.

   For example, suppose a Windows system produces your data source in the Cp1252 character set, but your Assure DQ server runs on a UNIX platform. You must specify that the character set of the data source is Cp1252.
6. The default Binary Byte Order is Most Significant on Right (little endian). Byte order depends on the computer processor that generates the data. Intel processors are generally little endian; most other processors are generally big endian (Most Significant on Left).

   If you are not sure which binary byte order option to select, check with your system administrator to find out the type of computer that generated the input data.
7. If the file has more than one type of logical record, select the Defines Multiple Record Types check box. You can add multiple record types on the Fields tab when this option is selected. For more information on how to create a record type, see “Add a Record Type” on page 127.
8. Specify the Path/URL to access the input source, up to 500 characters.

   For Networked Character/Byte Stream I/O access, specify a URL. Use forward slashes, not backslashes, for compatibility with all platforms. Host address is acceptable in all cases instead of hostname.

Use syntax similar to the following examples:

- ftp://hostname/filename or sftp://hostname/filename. To specify a user ID or password, select More > Network Credentials. Do not include network credentials in the URL. Some platforms require you to enclose the filename in single quotation marks. For specific guidelines, consult the documentation for your FTP server.
- http://hostname:port/filename. The file must be directly accessible by the host. It can't be in a subdirectory or on a different machine or partition.
- zip://zipfilepath/zipfilename.zip!filename.txt. This URL extracts a file located within a ZIP file.
- jar://jarfilepath/jarfilename.jar!filename.txt. This URL extracts a file located within a jar file.

JMS Message Queue access specifies the JNDI resource name that identifies the JMS queue.

9. If the Data Access Method selected is JMS Message Queue, specify the name of the Queue Factory, up to 500 characters. The Queue Connection Factory is a JNDI name that must be configured on the application server.
10. The system displays the Security Profile field only for a rules writer with security manager or security administrator authority. The security profile determines the permissions for this layout.

    If you have authority, you can specify the default security profile or a different profile.
11. Specify a Description of the file and the data you plan to capture.
12. Optionally, click Save to save the layout.

    You are now ready to specify the layout fields.

Add a Field

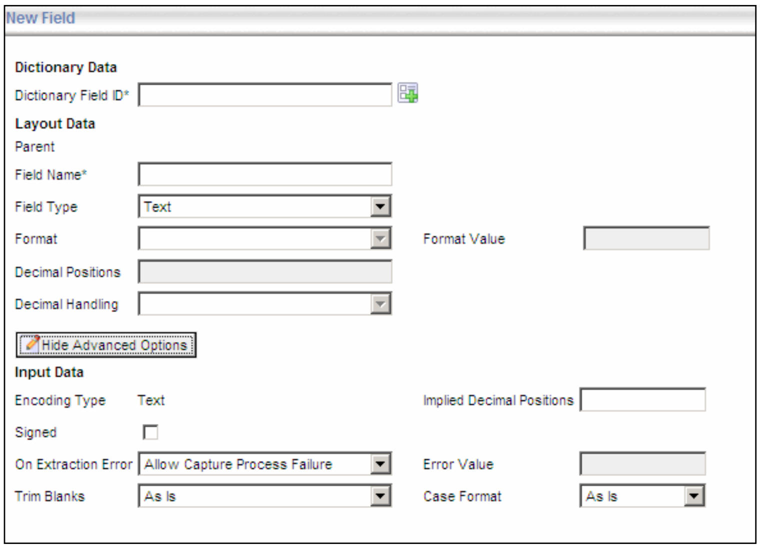
A field holds a single piece of information. You can add the fields in the ISO 8583 layout to specify the locations and types of data that the input source contains.

To add a ISO 8583 layout field, complete the following steps:

1. In the ISO 8583 Layout pane, click the Fields tab.

2. Select the location where you want to insert the field and click Add > Field. The system inserts the new field above the selection location. You can also double-click Add in the Fields list to insert a field above where you double-clicked.

   Complete the Dictionary Data, Layout Data, and Input Data fields. Depending on the field type selected, not every field in the window needs to be completed.



Completing Dictionary Data Section

3. Specify the Dictionary Field ID with the data element associated with this field. Data elements define specific transaction information. You can select from a list of available dictionary field IDs.

Completing Layout Data Section

4. Specify the Field Name. The name can be a maximum of 40 characters and can contain letters, numbers, and underscores.

5. Select a Field Type from the following options:

Field Type	Description
Text	For fields containing characters or numbers not used in performing calculations.
Numeric	For fields containing numbers up to 15 digits. Big Numeric is the preferred selection for numeric fields, but in some situations, Numeric may be more efficient. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Big Numeric	For fields containing numbers. This is the preferred selection for numeric fields. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Date	For fields containing dates. Date separators are stripped out by the system during extraction.
Boolean	For fields representing true or false values.

6. Do one of the following:
   - If the field type selected in step 5 was Numeric or Big Numeric, continue to step 7.
   - If the field type selected in step 5 was Date, skip to step 8.
   - If the field type selected in step 5 was Text or Boolean, skip to step 12.
7. Select a Format for Numeric or Big Numeric from the following options:

Format Type	Description
Default	Select Default if the input data does not contain non-numeric characters other than a decimal point.
Lenient	Select Lenient to specify a locale, strip out non-numeric characters, or indicate that parentheses enclose negative numbers. For more information on how to enter a parsing pattern, see step 9.

8. Select a Format for Date from the following options:

Format Type	Description

ISO 8601	For date with a user–defined format (a date format other than ISO 8601 or YY/MM), enter a valid format.
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	`y` Year
	`M` Month
	`d` Day of the month
	`k` Hour in day (1-24)
	`H` Hour in day (0-23)
	`h` Hour in am/pm (1-12)
	`K` Hour in am/pm (0-11)
	`m` Minute in hour
	`s` Second in minute
	`D` Day in year
	Examples of user-defined date formats are:
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	Examples of user-defined time formats are:
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

YY/MM	Date is in the format YY/MM, where YY is the last two digits of the year and MM is the two digits representing the month. Examples of dates in this format are 07/01, 97/12, and 06/11.
User-Defined	Select if the date format contains formatting characters other than hyphens or colons (ISO 8601 compliant dates). See step 9 for more information on how to enter a user-defined format in the Format Value field.

9. Optionally, for Numeric, Big Numeric, or Date field types, specify a parsing pattern or locale in the adjacent Format Value field from the following options:

Format Value	Description
Numeric or Big Numeric with a lenient format	Enter p: followed by a parsing pattern. For example, if the input data contains negative numbers enclosed in parentheses, has four digits before the decimal and two digits after the decimal, the parsing pattern is P:0000.00;(#). Go to the Java Web site at http://java.sun.com/j2se/1.4.2/docs/api/java/text/DecimalFormat.html for valid parsing syntax.

User-defined date format	If the date field format is user-defined, specify a valid format.
	
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	
	`y    Year`
	`M    Month`
	`d    Day of the month`
	`k    Hour in day (1-24)`
	`H    Hour in day (0-23)`
	`h    Hour in am/pm (1-12)`
	`K    Hour in am/pm (0-11)`
	`m    Minute in hour`
	`s    Second in minute`
	`D    Day in year`
	
	Examples of user-defined date formats are:
	
	`yyyy/MM/dd    2007/11/25`
	`yyMMdd        071125`
	`yy/MM/dd      07/11/25`
	
	Examples of user-defined time formats are:
	
	`HH:mm:ss      06:05:30`
	`kk:mm         24:00`

10. For Numeric or Big Numeric field types, specify the number of Decimal Positions.

11. Specify Decimal Handling to round or truncate the input data to the number of decimal places specified in step 10.
    - Rounding Example—If the number of decimals selected is two, then the number 34.255 is rounded to 34.26.
    - Truncating Example—If the number of decimals selected is two, then the number 34.255 is truncated to 34.25.

Advanced Options/Hide Advanced Options

The remaining Input Data fields are advanced options. Click Advanced Options to show the remaining fields. Click Hide Advanced Options to hide the remaining fields.

Completing the Input Data Section

12. The Encoding Type for the format of the input data to capture is Text, by default.
13. The Implied Decimal Position field is optional and indicates the implied location of the decimal. This information applies only to Text or Numeric encoded data that does not physically contain a decimal character.
14. For numeric fields in a COBOL file on an IBM mainframe, select the Signed check box if the field is a signed field.
    A signed field is composed of regular Extended Binary Coded Decimal Interchange Code (EBCDIC) numeric characters, one character per byte, for all the digits of the field except the one that holds the sign, either the most-significant (sign leading) or the least-significant (sign trailing) digit. The digit that holds the sign combines with the sign of the number and the digit. A signed field saves one byte that the sign would otherwise occupy.
15. Use On Extraction Error to specify how the system will respond if the input data is missing or does not match the specified encoding type or format/pattern.

Option	System Response
Allow Capture Process Failure	Stop processing and report a capture processing error.
Substitute Literal	Use an error value of your choice and assign the value if an extraction error occurs.
Substitute Null	Use Null in place of the value that could not be captured.

16. Error Value is available if Substitute Literal was selected in the previous step. Specify a default value to use if an extraction error occurs. For a date field, enter a date in ISO format.
17. Trim Blanks is available if the specified field type selected is Text or Boolean. Specify if the leading and trailing blank characters should be truncated.
18. Case Format is available if the field type selected is Text. Specify how to convert the text of the case of the characters:

Select	Description
As Is	Does not convert the case of the text.
Lower	Converts the case of the text to all lower case.
Uppercase	Converts the case of the text to all upper case.

19. Click OK.

    The lower pane displays the ISO 8583 Layout with the name and type of the field just added.
20. Repeat step 2 through step 19 to add another field.
21. Click Save after adding a field.

Add a Group

An ISO 8583 layout can contain fields that belong together. You can define a group for these fields and then add the fields to the group.

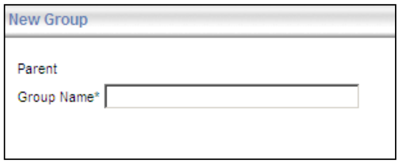
Groups and fields are defined in the same sequence as in the file.

To add a group, complete the following steps:

1. Create an ISO 8583 layout or select an ISO 8583 layout that already exists.
2. Click the Fields tab.
3. Select the location where you want to insert the group and click Add > Group. The system inserts the new group above the selected location.

   You can also double-click Add in the Fields list to insert the group above where you double-clicked.

Use the New Group page to create the new group.



4. Specify Group Name. This must be a unique name that has not been used for a field, group, record type, or sublayout in the current layout.
5. Click OK.
6. To add fields to the group, see “Add a Field” on page 120.

Add a Record Type

In an ISO 8583 file layout, the data can represent different information. For example, an insurance company has a file of claim information, but the information represents multiple types of claims such as medical claims, vision claims, and dental claims. A record type is needed when the data source contains more than one logical record type.

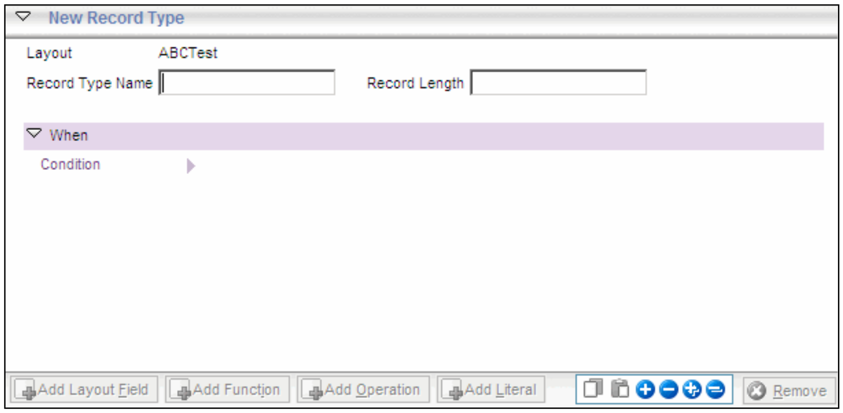
Each record in the data file contains something that identifies it as unique and distinguishes it from the other types of records. In the insurance claim example, this unique identifier is a field that contains a code for each type of claim. To identify the type of claim, build a condition statement. For example, a condition statement to identify dental claims can be *When recType = ‘PAYD’*. The statement indicates that if the record meets the criteria, it is a dental claim and is treated accordingly.

To add a record type, complete the following steps:

1. Create an ISO 8583 layout or select an ISO 8583 layout that already exists.
2. On the Details tab, select the Defines Multiple Record Types check box.
3. Click the Fields tab.
4. Define any fields that are needed to determine your record types.
   These fields appear in the Fields list, above the record type that you will add in the next step. In the insurance example, the recType field is used to determine the type of claim for each record.
   For instructions on how to add a field, see “Add a Field” on page 120.
5. Select the location where you want to insert the record type and click Add > Record Type. The system inserts the new record type above the selected location.

You can also double-click Add in the Fields list to insert the record type above where you double-clicked.

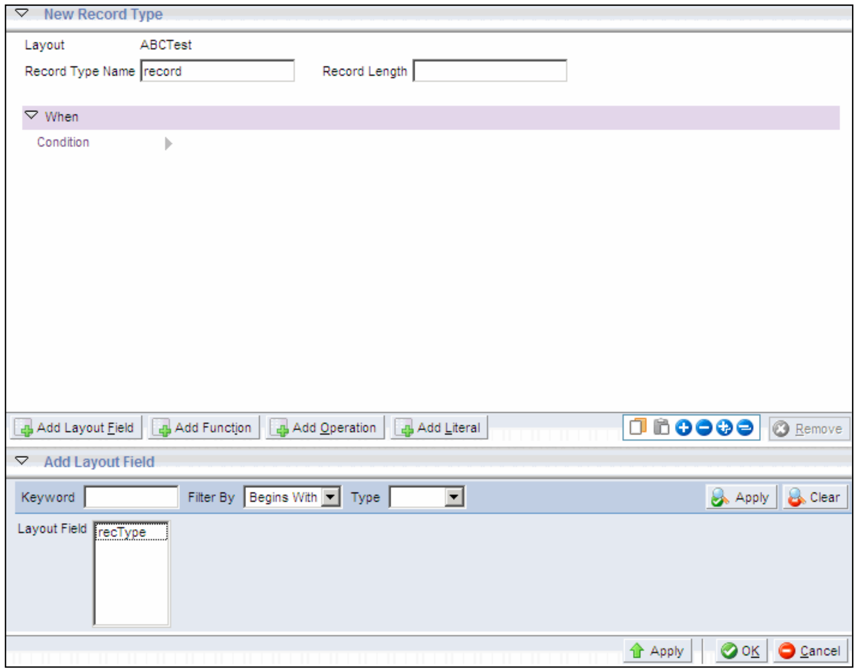
Use the New Record Type page to create the new record type.



6. In the Record Type Name field, specify a descriptive name for the record type.
7. Optionally, specify the Record Length for the record type field.
8. To build a condition statement to identify a specific record type, complete the following steps:
    a. Under When, click Condition.

        The expression builder buttons are now available.

b. Use the expression builder buttons to create a condition statement. In the example, the Add Layout Field displays in the bottom pane when you click Add Layout Field. The fields you defined in step 4 display in the list of layout fields.



c. Based on the condition statement, select the appropriate information in the bottom pane and click Apply.

d. Continue to build the condition statement using the following buttons:

Button	Description
Add Layout Field	Drop-down list of layout fields.
Add Function	Drop-down list of available functions.
Add Operation	Drop-down list of available operators.
Add Literal	Select Text or Numeric and then specify the literal text. Select Boolean and then select true or false.

e. Click Apply after each addition to the condition statement.

f. When the condition is complete, click OK to return to the Fields tab.

9. Begin adding fields to the record type. For instructions on how to add fields, see "Add a Field" on page 120.

Add a Sublayout

A sublayout in a fixed layout can be used to:

- Define a fixed number of bytes according to another layout (fixed, delimited, or XML).
- Define a portion of a record according to another ISO 8583 layout (to allow the reuse of common structures).
- Contain groups of fields that occur multiple times in the source data file. Using sublayouts makes it easier to extract the data.

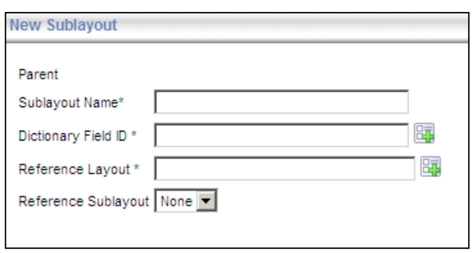
Note Before you use a sublayout to define an entirely separate set of data stored in a single field, define a layout for this data. You can then refer to that layout when you create the sublayout.

To add a sublayout, complete the following steps:

1. Create an ISO 8583 layout or select an ISO 8583 layout that already exists.
2. Click the Fields tab.
3. Select the location where you want to insert the sublayout and click Add > Sublayout. The system inserts the new sublayout above the selected location.

   You can also double-click Add in the Fields list to insert the sublayout at the end of a level.

   Use the New Sublayout page to create the new sublayout.

4. Specify the Sublayout Name.
5. Specify the Dictionary Field ID. The Dictionary Field ID associates the field with the data element that defines specific transaction information. Select from a list of standard and private dictionary field IDs.

6. Specify a Reference Layout. This is a previously created layout that defines the data in the field, column, or row specified in step 3 through step 5. You cannot reference a layout that contains multiple record types.
7. Optionally, specify a Reference Sublayout. This is a sublayout in the reference layout that defines the data. Use a sublayout to narrow the fields available for capture. Sublayouts that contain a reference layout are not available for selection.
8. Click OK.

Editing an ISO 8583 Layout

When you are working on any type of layout, you can perform any of the following tasks:

- Edit a sublayout, record type, group, or field, depending on the layout type.
- Remove a sublayout, record type, group, or field, depending on the layout type.
- Add an advanced path or URL.
- Duplicate a layout.
- Remove a layout.
- Test a layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

9

Java Object Layouts

Java is a a simple but powerful object-oriented programming language. When Java is compiled, it is compiled into platform-independent byte code. This byte code can be interpreted by Java Virtual Machine (JVM) on whichever platform it is run.

Java provides a mechanism called object serialization. A serialized object is an object represented as a sequence of bytes that includes the object's data, as well as information about the object's type and the types of data stored in the object. A serialized object can be written into a file or a memory buffer, or transmitted across a network connection. Later, the serialized object can be deserialized in the same or another computer environment.

A Java Object layout defines the data in a Java object for use by Assure DQ. You can create a Java Object layout from a Java class file or from the serialized object. Consider the following questions:

- What is the specific data that you want to capture? The layout does not need to represent each and every data property or attribute in the class or the serialized object. You are only required to represent the properties and attributes for which you plan to capture data.
- Compare the number of properties or attributes to capture against the total number in the class or serialized object. If your control point uses most of the properties or attributes, you may want to capture all the properties or attributes to maximize reusability for this layout.
- Does the class or serialized object contain more than one type of logical data? For example, if the class contains claim information, does the information represent insurance claims for life, home owner’s, and accident?
- If there are errors when Assure DQ extracts the data, how do you want to handle the errors?

Java Class Example

Below is an example of a Java class named Employee. You can generate a Java Object layout from the Java class byte code or from the serialized object.

```
public class Employee
{
    private String name;
    private int yearsWorked;

    public Employee(String name, int yearsWorked) {

        this.name = name;
        this.yearsWorked = yearsWorked;
    }
    public Employee() {

    }
    public String getName() {
        return name;
    }
    public int getYearsWorked() {
        return yearsWorked;
    }
    public void setName(String name) {
        this.name = name;
    }
    public void setYearsWorked(int yearsWorked) {
        this.yearsWorked = yearsWorked;
    }
}
```

Before you create the layout, examine the properties and attributes to determine the data you want in the layout. For instructions on how to generate a layout automatically, see "Generate a Java Object Layout Automatically" on page 146.

Field Types

Before you begin to build the layout, analyze the input data to determine the location and types of data. Depending on the options selected on the Details tab, a Java Object layout can contain one or more of the following:

- Field—A field holds a single piece of information. You can capture as many fields in a record as you need. You may decide to only capture four fields, or you may decide to capture all the fields in the records. You can determine this after analyzing the input data. See "Add a Field" on page 138.
- Group—A fixed layout can contain repetitive fields. For these fields, you can define a group rather than define each field separately. For example, auto insurance data might have a group named Driver, and the fields in that group are related to the driver, such as name, address, city, state, ZIP code, driver's license, and SSN. See "Add a Group" on page 143.
- Sublayout—Sublayouts define the structure of data according to another layout type (fixed, XML, delimited, or ISO 8583) or another Java Object layout. Sublayouts can also be used to define fields that occur multiple times in the input file to make it easier to extract the data. See "Add a Sublayout" on page 144.

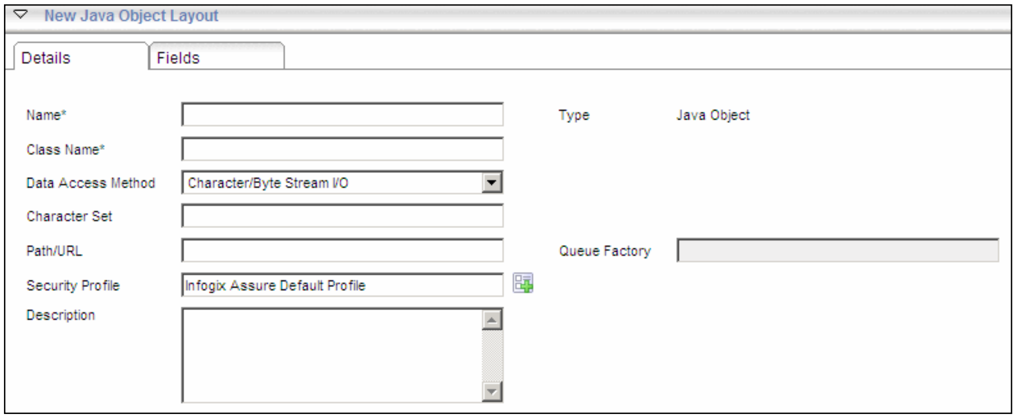
Creating a Java Object Layout

After you analyze the data and determine what data to capture, you are ready to create a Java Object layout.

To create a Java Object layout, complete the following steps:

1. Click Rules > Layouts.
2. Click New Layout > Java Object.

You can now complete the details and fields for the layout in the New Java Object Layout pane.



Completing the Java Object Layout Details

1. Specify a Name to reflect the content and type of data source.

Tip	After the layout is saved, you cannot edit the layout name.

2. Specify the fully qualified Class Name.
3. Select a Data Access Method from the following options:

Data Access Method	Description
Character/Byte Stream I/O	Data is byte or character data accessed by standard Java input methods. This is the default data access method.
Networked Character/Byte Stream I/O	Data is input stream byte or character data accessed via URLs with protocols such as ftp or http.
API Data	Data is byte or character data supplied through an Application Program Interface (API).
JMS Message Queue	Data is byte or character data supplied through a JMS queue.

4. If your data is from a different platform, the data may be encoded using a different character set than the platform on which Assure DQ is installed. To accommodate this situation, specify the conversion type in the Character Set field. If necessary, Assure DQ will convert the data to a compatible character set during control point execution.

For example, suppose a Windows system produces your data source in the Cp1252 character set, but your Assure DQ server runs on a UNIX platform. You must specify that the character set of the data source is Cp1252.

5. Specify the Path/URL to access the input source, up to 500 characters.

   For Networked Character/Byte Stream I/O access, specify a URL. Use forward slashes, not backslashes, for compatibility with all platforms. Host address is acceptable in all cases instead of hostname. Use syntax similar to the following examples:

   - ftp://hostname/filename or sftp://hostname/filename. To specify a user ID or password, select More > Network Credentials. Do not include network credentials in the URL. Some platforms require you to enclose the filename in single quotation marks. For specific guidelines, consult the documentation for your FTP server.
   - http://hostname:port/filename. The file must be directly accessible by the host. It can't be in a subdirectory or on a different machine or partition.
   - zip://zipfilepath/zipfilename.zip!filename.txt. This URL extracts a file located within a ZIP file.
   - jar://jarfilepath/jarfilename.jar!filename.txt. This URL extracts a file located within a jar file.

   JMS Message Queue access specifies the JNDI resource name that identifies the JMS queue.

6. If the Data Access Method selected is JMS Message Queue, specify the name of the Queue Factory, up to 500 characters. The Queue Connection Factory is a JNDI name that must be configured on the application server.

7. The system displays the Security Profile field only for a rules writer with security manager or security administrator authority. The security profile determines the permissions for this layout.

   If you have authority, you can specify the default security profile or a different profile.

8. Specify a Description of the file and the data you plan to capture.

9. Optionally, click Save to save the layout.

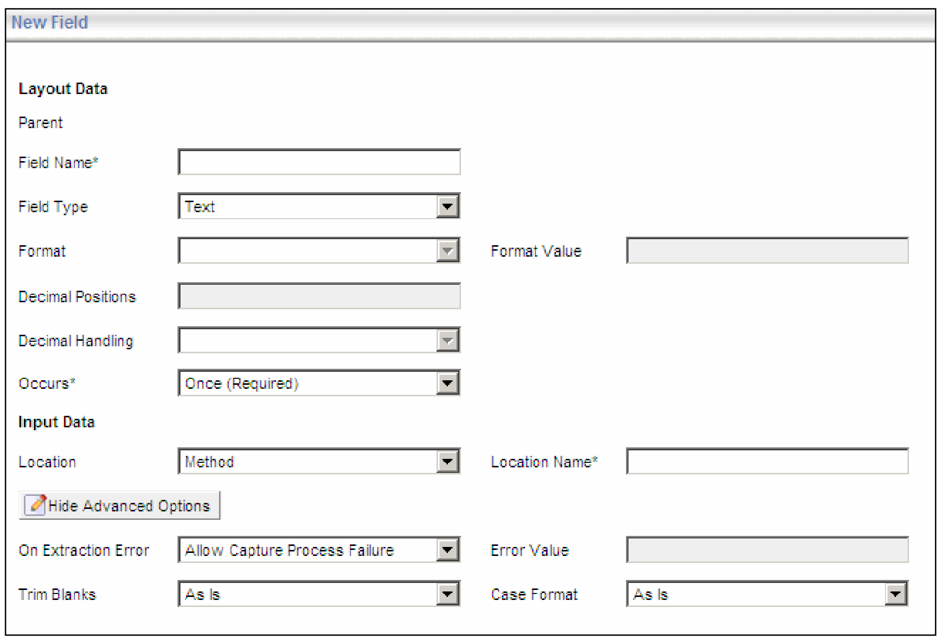
   You are now ready to specify the layout fields.

Add a Field

A field holds a single piece of information. You can add the fields in the Java Object layout to specify the properties and attributes of the data.

To add a field, complete the following steps:

1. Select a Java Object layout and click the Fields tab.
2. Select the location where you want to insert the field and click Add > Field. The system inserts the new field above the selected location. You can also double-click Add in the Fields list to insert a field above where you double-clicked.
   You can now complete the Layout and Input Data fields. Depending on the field type selected, not every field in the window needs to be completed.
   Use the New Field page to create a new field.



Completing Layout Data Section

3. Specify the Field Name. This must be a unique name that has not been used for a field, group, or sublayout in the current layout.

4. Select a Field Type from the following options:

Field Type	Description
Text	For fields containing characters or numbers not used in performing calculations.
Numeric	For fields containing numbers up to 15 digits. Big Numeric is the preferred selection for numeric fields, but in some situations, Numeric may be more efficient. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Big Numeric	For fields containing numbers. This is the preferred selection for numeric fields. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Date	For fields containing dates. Date separators are stripped out by the system during extraction.
Boolean	For fields representing true or false values.

5. Do one of the following:
   - If the field type selected in step 4 was Numeric or Big Numeric, continue to step 6.
   - If the field type selected in step 4 was Date, skip to step 7.
   - If the field type selected in step 4 was Text or Boolean, skip to step 11.
6. Select a Format for Numeric or Big Numeric from the following options:

Format Type	Description
Default	Select Default if the input data does not contain non-numeric characters other than a decimal point.
Lenient	Select Lenient to specify a locale, strip out non-numeric characters, or indicate that parentheses enclose negative numbers. For more information on how to enter a parsing pattern, see step 8.

7. Select a date Format from the following options:

Format Type	Description

ISO 8601	For date with a user–defined format (a date format other than ISO 8601 or YY/MM), enter a valid format.
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	`y` `Year`
	`M` `Month`
	`d` `Day of the month`
	`k` `Hour in day (1-24)`
	`H` `Hour in day (0-23)`
	`h` `Hour in am/pm (1-12)`
	`K` `Hour in am/pm (0-11)`
	`m` `Minute in hour`
	`s` `Second in minute`
	`D` `Day in year`
	Examples of user-defined date formats are:
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	Examples of user-defined time formats are:
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

YY/MM	Date is in the format YY/MM, where YY is the last two digits of the year and MM is the two digits representing the month. Examples of dates in this format are 07/01, 97/12, and 06/11.
User-Defined	Select if the date format contains formatting characters other than hyphens or colons (ISO 8601 compliant dates). See step 8 for more information on how to enter a user-defined format in the Format Value field.

8. Optionally, for Numeric, Big Numeric, or Date field types, specify a parsing pattern or locale in the adjacent Format Value field from the following options:

Format Value	Description
Numeric or Big Numeric with a lenient format	Enter p: followed by a parsing pattern. For example, if the input data contains negative numbers enclosed in parentheses, and has four digits before the decimal and two digits after the decimal, the parsing pattern is P:0000.00;(#). Go to the Java Web site at http://java.sun.com/j2se/1.4.2/docs/api/java/text/DecimalFormat.html for valid parsing syntax.

User-defined date format	If the date field format is user-defined, specify a valid format.
	
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	
	`y    Year`
	`M    Month`
	`d    Day of the month`
	`k    Hour in day (1-24)`
	`H    Hour in day (0-23)`
	`h    Hour in am/pm (1-12)`
	`K    Hour in am/pm (0-11)`
	`m    Minute in hour`
	`s    Second in minute`
	`D    Day in year`
	
	Examples of user-defined date formats are:
	
	`yyyy/MM/dd    2007/11/25`
	`yyMMdd        071125`
	`yy/MM/dd      07/11/25`
	
	Examples of user-defined time formats are:
	
	`HH:mm:ss      06:05:30`
	`kk:mm         24:00`

9. For Numeric or Big Numeric field types, specify the number of Decimal Positions.

10. Specify Decimal Handling to round or truncate the input data to the specified number of decimal places specified in step 9.
    - Rounding Example—If the number of decimals selected is two, then the number 34.255 is rounded to 34.26.
    - Truncating Example—If the number of decimals selected is two, then the number 34.255 is truncated to 34.25.
11. Select how often this field Occurs. Select Once (Required) if the field occurs exactly one time or Once (Optional) if the field occurs zero or one time. Select Many (Required) if the field occurs multiple times or Many (Optional) if the field occurs zero or multiple times.

Completing the Input Data Section

12. Select whether Location is determined by Method or Property.
13. Based on the Location selected, specify the Location Name. For example, if the Location selected is Method, then specify the whole method name, which is case-sensitive. If Property is selected, then specify the property name.

Advanced Options/Hide Advanced Options

The remaining Input Data fields are advanced options. Click Advanced Options to show the remaining fields. Click Hide Advanced Options to hide the remaining fields.

14. Use On Extraction Error to specify how the system will respond if the input data is missing or does not match the specified encoding type or format/pattern:

Option	System Response
Allow Capture Process Failure	Stop processing and report a capture processing error.
Substitute Literal	Use an error value of your choice and assign the value if an extraction error occurs.
Substitute Null	Use Null in place of the value that could not be captured.

15. Error Value is available if Substitute Literal was selected in the previous step. Specify a default value to use if an extraction error occurs. For a date field, enter a date in ISO format.

16. Trim Blanks is available if the specified field type selected is Text or Boolean. Specify if the leading and trailing blank characters should be truncated.
17. Case Format is available if the field type selected is Text. Specify how to convert the text of the case of the characters:

Select	Description
As Is	Does not convert the case of the text.
Lower	Converts the case of the text to all lower case.
Uppercase	Converts the case of the text to all upper case.

18. Click OK.

    The lower pane displays the Java Object layout with the name and type of the field just added.
19. Repeat step 2 through step 18 to add another field.
20. Click Save after adding a field.

Add a Group

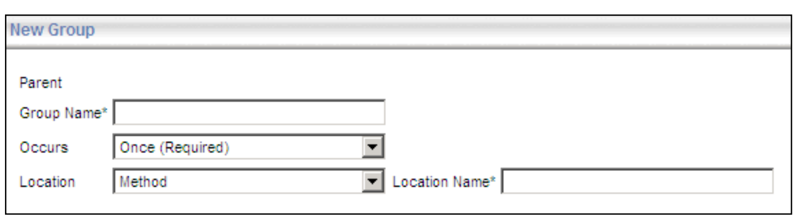
A Java Object layout can contain fields that belong together. You can define a group for these fields and then add the fields to the group. You can also specify if the group occurs once or multiple times.

To add a group, complete the following steps:

1. Select a Java Object layout and click the Fields tab.
2. Select the location where you want to insert the group and click Add > Group. The system inserts the new group above the selected location.

   You can also double-click Add in the Fields list to insert a group above where you double-clicked.

   Use the New Group page to create the new group.



3. Specify Group Name. This must be a unique name that has not been used for a field, group, or sublayout in the current layout.

4. Select how often this field Occurs. Select Once (Required) if the field occurs exactly one time or Once (Optional) if the field occurs zero or one time. Select Many (Required) if the field occurs multiple times or Many (Optional) if the field occurs zero or multiple times.
5. Select whether Location is determined by Method or Property.
6. Based on the Location selected, specify the Location Name. For example, if the Location selected is Method, then specify the whole method name, which is case-sensitive. If Property is selected, then specify the property name.
7. Click OK.
8. To add fields to the group, see "Add a Field" on page 138.

Add a Sublayout

A sublayout in a Java Object layout can be used to:

- Define a fixed number of bytes according to another layout (fixed, delimited, XML, or ISO 8583).
- Define a portion of a record according to another Java Object layout (to allow the reuse of common structures).
- Contain groups of fields that occur multiple times in the source data file. Using sublayouts makes it easier to extract the data.

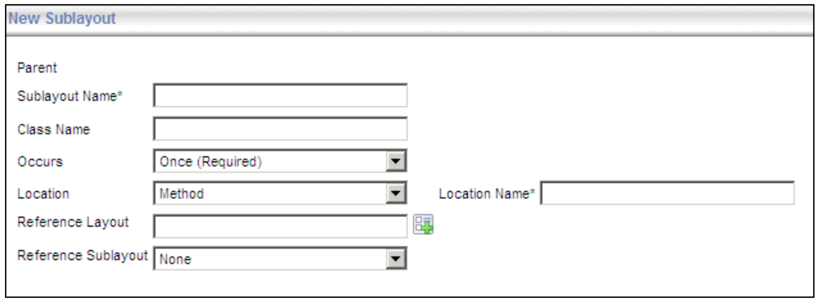
Note Before you use a sublayout to define an entirely separate set of data stored in a single field, define a layout for this data. You can then refer to that layout when you create the sublayout.

To add a sublayout, complete the following steps:

1. Select a Java Object layout and click the Fields tab.
2. Select the location where you want to insert the sublayout and click Add > Sublayout. The system inserts the new sublayout above the selected location.

   You can also double-click Add in the Fields list to insert a sublayout above where you double-clicked.

Use the New Sublayout page to create the new sublayout.



3. Specify a Sublayout Name. This must be a unique name that has not been used for a field, group, or sublayout in the current layout.
4. Specify the Class Name. This is the fully qualified class name with all packages, for example, com.infogix.capturemgr.Capture.
5. Select how often this field Occurs. Select Once (Required) if the field occurs exactly one time or Once (Optional) if the field occurs zero or one time. Select Many (Required) if the field occurs multiple times or Many (Optional) if the field occurs zero or multiple times.
6. Select whether Location is determined by Method or Property.
7. Based on the Location selected, specify the Location Name. For example, if the Location selected is Method, then specify the whole method name, which is case-sensitive. If Property is selected, then specify the property name.
8. Optionally, specify a Reference Layout. This is a previously created layout that defines the data in the row specified in step 3 through step 7. You cannot reference a layout that contains multiple record types.
9. Optionally, specify a Reference Sublayout. This is a sublayout in the reference layout that defines the data. Use a sublayout to narrow the fields available for capture. Sublayouts that contain a reference layout are not available for selection.
10. Click OK.

Editing a Java Object Layout

When you are working on a Java Object layout, you can:

- Generate a Java Object Layout Automatically

When you are working on any type of layout, you can perform any of the following tasks:

- Edit a sublayout, group, or field depending on the layout type.
- Remove a sublayout, group, or field depending on the layout type.
- Add an advanced path or URL.
- Duplicate a layout.
- Remove a layout.
- Test a layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

Generate a Java Object Layout Automatically

You can generate a Java Object layout automatically from:

- A Java class file containing byte code
- A serialized Java object

Tip	After you generate the layout, review the layout to ensure that the system generated the appropriate field types.

Generate a Java Object Layout from a Java Class

To generate a Java Object layout automatically from a Java class, complete the following steps:

1. Select a Java Object layout and click the Fields tab.
   If there are fields, groups, or sublayouts listed in the Fields list, delete all items.
2. Click Generate > From Class.

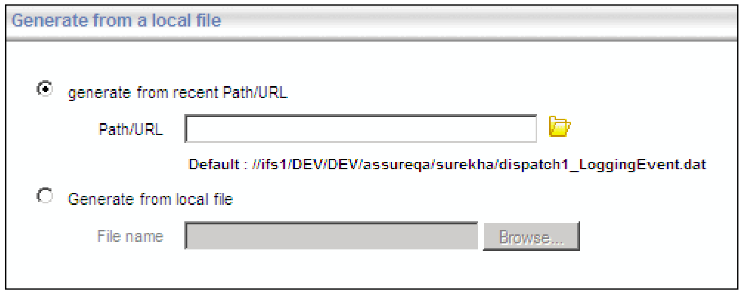
   The system generates the layout according to the specified options.

Generate Java Object Layout from a File

To generate a layout automatically from a serialized object, complete the following steps:

1. Select a Java Object layout and click the Fields tab.
   If there are fields, groups, or sublayouts listed in the Fields list, delete all items.

2. Click Generate > From File.



3. Select one of the following options:
   - Generate from recent path/URL—Use the default path/URL if one was entered on the Details tab. You can also select a serialized object file from the last ten files used, choose a file from the test data repository, or specify a path.
   - Generate from local file—Browse to select a serialized object file on your local or network drive.
4. Click Generate.
   The system generates the layout according to the specified options. If the class name in the serialized object file is different than the class name specified on the Details tab, the class name is replaced on the Details tab.

10

OLAP Layouts

An OLAP layout defines data for use by Assure DQ that resides in a multi-dimensional format database. For example, you might use OLAP technology to access data that resides in an SAP Business Information Warehouse.

The data must reside on an OLAP server at a URL that the Assure DQ server can access. You must specify an MDX query to identify the data you need. Based on this information, the system can automatically generate a layout describing the data you want to use.

To create an OLAP layout, you need to complete the following steps:

- Identify the URL of the OLAP server
- Provide an MDX query
- Automatically generate the layout

Information Needed Before You Start

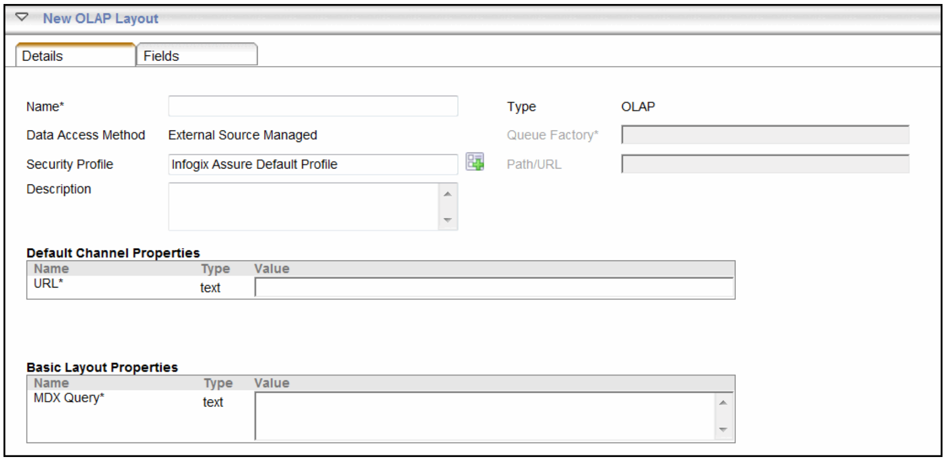
You will need the URL of the OLAP server containing the data you need to access. You also need an MDX query statement that defines which data you want. If you do not know how to write the appropriate query, ask your database administrator for help. Test the MDX query before defining the OLAP layout.

Creating an OLAP Layout

To create an OLAP layout, complete the following steps:

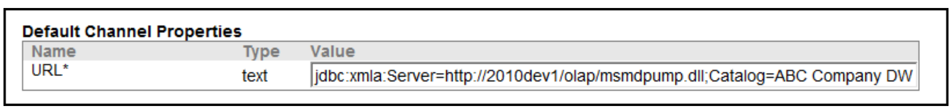
1. Click Rules > Layouts.
2. Click New Layout > OLAP.
   The OLAP Layout Details tab displays.

3. Specify a Name for your layout.



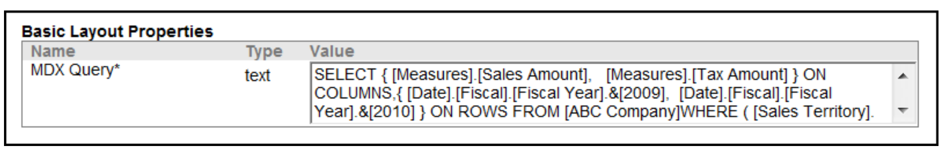
4. Specify the URL of your OLAP server.

   Specify the URL of the OLAP server in your development environment. You can change the URL to the location of the test or production OLAP server after generating the layout.



   The example above is the URL for a Microsoft Sequel Server Analysis Server.

5. Specify an MDX Query to request the fields you want to include in the layout.

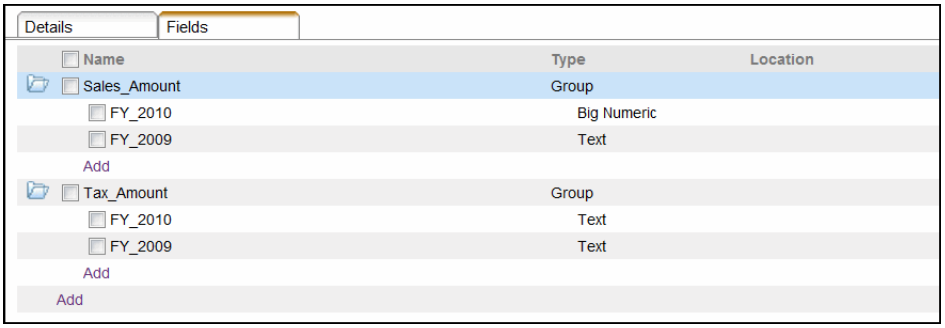


   Use standard MDX syntax and do not use semicolons.

6. Click Generate.

   The generated layout appears on the Fields tab.

7. Expand any folders and verify that the layout has the fields and field types you expect.



8. Return to the Details tab and enter the URL for the test or production OLAP server, if it is different than the URL you entered to generate the layout.
9. Test the layout.

   To conduct a useful test, use a different URL than the one used to generate the layout.

Maintaining and Testing Layouts

When you are working on any type of layout, you can perform any of the following tasks:

- Edit a sublayout, group, or field.
- Remove a sublayout, group, or field.
- Duplicate a layout.
- Remove a layout.
- Test a layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

11

HTML Layouts

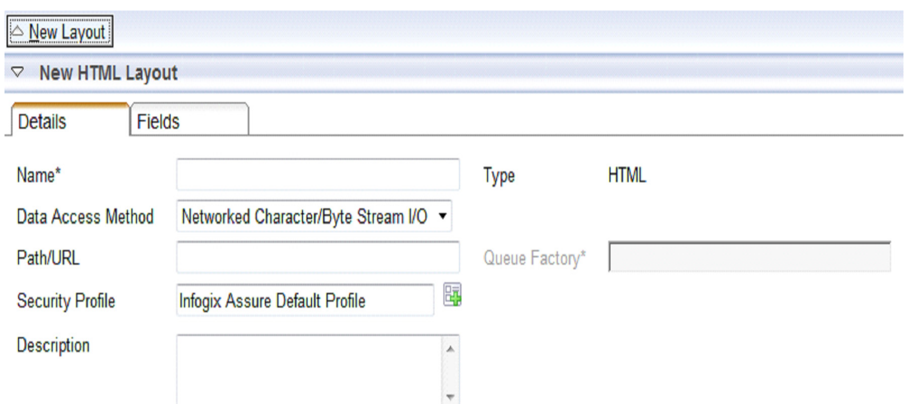
HTML (HyperText Markup Language) is the standard markup language used to create web pages. It is written in the form of HTML elements consisting of tags enclosed in angle brackets (like <html>). HTML tags most commonly come in pairs like <h1> and </h1>, although some represent empty elements and so are unpaired, for example <img>. The first tag in such a pair is the start tag, and the second is the end tag (they are also called opening tags and closing tags).

An HTML layout defines data for use by Assure DQ that resides in an HTML document. The location of the web page to extract is specified by an HTTP URL, and must be accessible from the Assure DQ server environment.

Creating an HTML Layout

To create an HTML layout, complete the following steps:

1. Click Rules > Layouts.
2. Click New Layout > HTML.
   The HTML Layout Details tab is displayed.
   You can now complete the details and fields for the layout.



Completing the HTML Layout Details

1. Specify a name to reflect the content and type of data source.

Tip	After the layout is saved, you cannot edit the layout name.

2. Select a Data Access Method from the following options:

Data Access Method	Description
Character/Byte Stream I/O	Data is byte or character data accessed by standard Java input methods.
Networked Character/Byte Stream I/O	Data is input stream byte or character data accessed via URLs with protocols such as ftp or http. This is the default data access method.
API Data	Data is byte or character data supplied through an Application Program Interface (API).
JMS Message Queue	Data is byte or character data supplied through a JMS queue.

3. Specify the Path/URL of the web page or HTML content to access the input source, up to 500 characters. For Networked Character/Byte Stream I/O access, specify a URL. Use forward slashes, not backslashes, for compatibility with all platforms.

   Host address is acceptable in all cases instead of the hostname. Use syntax similar to the following examples:

   - ftp://hostname/filename or sftp://hostname/filename.html. To specify a user ID or password, select More > Network Credentials. Do not include network credentials in the URL. Some platforms require you to enclose the filename in single quotation marks. For specific guidelines, consult the documentation for your FTP server.
   - http://hostname:port/filename.html.
   - zip://zipfilepath/zipfilename.zip!filename.html. This URL extracts a file located within a ZIP file.
   - jar://jarfilepath/jarfilename.jar!filename.html. This URL extracts a file located within a jar file.

   JMS Message Queue access specifies the JNDI resource name that identifies the JMS queue.

4. If the Data Access Method selected is JMS Message Queue, specify the name of the Queue Factory, up to 500 characters. The Queue Connection Factory is a JNDI name that must be configured on the application server.
5. The system displays the Security Profile field only for a rules writer with security manager or security administrator authority. The security profile determines the permissions for this layout.

   If you have authority, you can specify the default security profile or a different profile.
6. Specify a Description of the file and the data you plan to capture.
7. Optionally, click Save to save the layout.

   You are now ready to specify the layout fields.

Add a Field

A field holds a single piece of information. You can define one or more layout text fields that need to be extracted by copying the XPATH expression from a HTML parsing tool into the field's "Location" attribute.

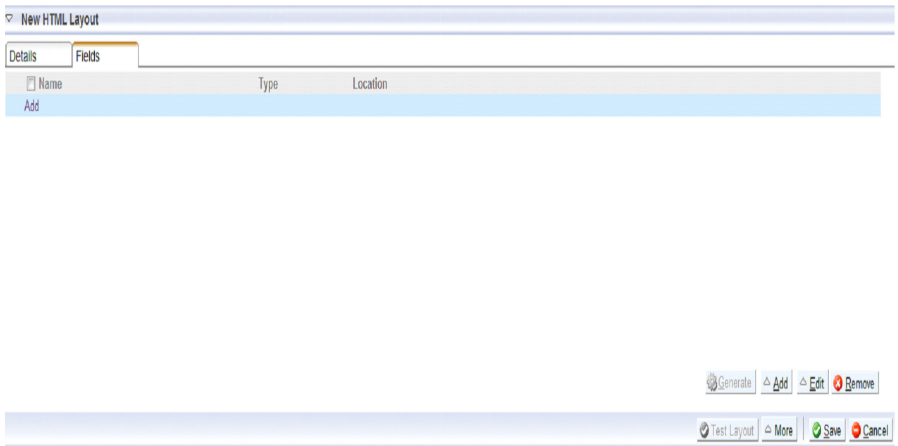
Note that the XPATH expression populated in the Location attribute should be relative to the "Location" attribute of the parent.

XPATH is an expression language that can be used to navigate through elements and attributes in an XML (or HTML) document.

Tip The Location value for the layout field must contain a valid XPATH expression. The developer windows in Google Chrome™ browser can be used to find a specific field that needs to be extracted by looking at the HTML DOM structure to find an XPATH expression. Alternatively, there are numerous tools and guides available on the web to assist in constructing a valid XPATH expression.

To add a field, complete the following steps:

1. In the New HTML Layout pane, click the Fields tab.

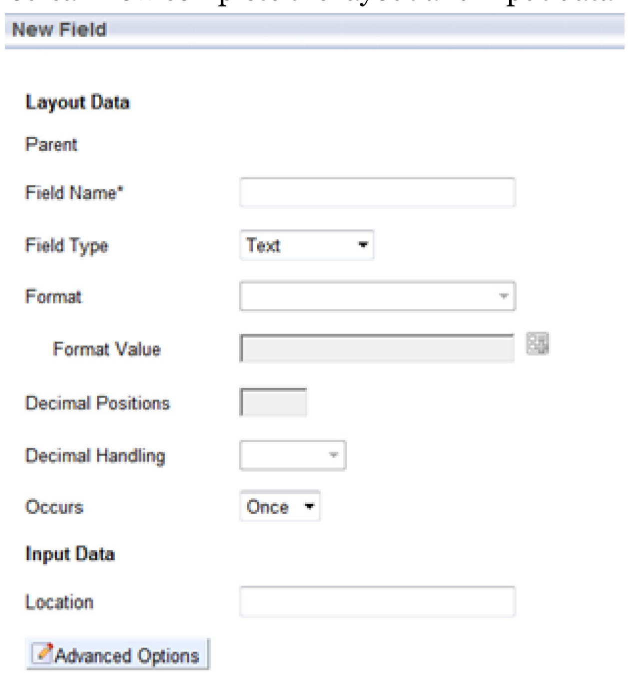


2. Select the location where you want to insert the field and click Add > Field.

   The system inserts the new field above the selected location.

   You can also double-click Add in the Fields list to add a field above where you double-clicked.

   You can now complete the layout and input data fields.



Completing the Layout Data Section

3. Specify the Field Name. The name can be a maximum of 40 characters and can contain letters, numbers, and underscores.

4. Select a Field Type from the following options:

Field Type	Description
Text	For fields containing characters or numbers not used in performing calculations.
Secure Text	For fields containing characters or numbers not used in performing calculations. The real value of a secure text field can only be captured in a control field which is secure text.
Numeric	For fields containing numbers up to 15 digits. Big Numeric is the preferred selection for numeric fields, but in some situations, Numeric may be more efficient. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Big Numeric	For fields containing numbers. This is the preferred selection for numeric fields. Non-numeric items such as commas, currency signs, and negative indicators are stripped out by the system during extraction.
Date	For fields containing dates. Date separators are stripped out by the system during extraction.
Boolean	For fields representing true or false values.

5. Do one of the following:

- If the field type selected in step 4 was Numeric or Big Numeric, continue to step 8.
- If the field type selected in step 4 was Date, skip to step 7.
- If the field type selected in step 4 was Text, Secure Text or Boolean, skip to step 11.

6. Select a Format for Numeric or Big Numeric from the following options:

Format Type	Description
Default	Select Default if the input data does not contain non- numeric characters other than a decimal point.
Lenient	Select Lenient to specify a locale, strip out non-numeric characters, or indicate that parentheses enclose negative numbers. For more information on how to enter a parsing pattern, see step 8.

7. Select a Format for Date from the following options:

Format Type	Description

ISO 8601	For date with a user–defined format (a date format other than ISO 8601 or YY/MM), enter a valid format.
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	`y` `Year`
	`M` `Month`
	`d` `Day of the month`
	`k` `Hour in day (1-24)`
	`H` `Hour in day (0-23)`
	`h` `Hour in am/pm (1-12)`
	`K` `Hour in am/pm (0-11)`
	`m` `Minute in hour`
	`s` `Second in minute`
	`D` `Day in year`
	Examples of user-defined date formats are:
	`yyyy/MM/dd` `2007/11/25`
	`yyMMdd` `071125`
	`yy/MM/dd` `07/11/25`
	Examples of user-defined time formats are:
	`HH:mm:ss` `06:05:30`
	`kk:mm` `24:00`

Format Type	Description
YY/MM	Date is in the format YY/MM, where YY is the last two digits of the year and MM is the two digits representing the month. Examples of dates in this format are 07/01, 97/12, and 06/11.
User-Defined	Select if the date format contains formatting characters other than hyphens or colons (ISO 8601 compliant dates). See step 9 for more information on how to enter a user-defined format in the Format Value field.

8. Optionally, for Numeric, Big Numeric, or Date field types, specify a parsing pattern or locale in the adjacent Format Value field from the following options:

Format Value	Description
Numeric or Big Numeric with a lenient format	Enter p: followed by a parsing pattern. For example, if the input data contains negative numbers enclosed in parentheses and has four digits before the decimal and two digits after the decimal, the parsing pattern is P:0000.00;(#). Go to the Java Web site at http://java.sun.com/j2se/1.4.2/docs/api/java/text/DecimalFormat.html for valid parsing syntax.

Format Value	Description

User-defined date format	If the date field format is user-defined, specify a valid format.
	The following list shows the user-defined date formatting syntax. All values are case-sensitive.
	`y     Year`
	`M     Month`
	`d     Day of the month`
	`k     Hour in day (1-24)`
	`H     Hour in day (0-23)`
	`h     Hour in am/pm (1-12)`
	`K     Hour in am/pm (0-11)`
	`m     Minute in hour`
	`s     Second in minute`
	`D     Day in year`
	Examples of user-defined date formats are:
	`yyyy/MM/dd     2007/11/25`
	`yyMMdd         071125`
	`yy/MM/dd       07/11/25`
	Examples of user-defined time formats are:
	`HH:mm:ss       06:05:30`
	`kk:mm          24:00`

9. For Numeric or Big Numeric field types, specify the number of Decimal Positions the layout field should have. If you specify decimal positions, use the Decimal Handling field below to indicate whether to truncate or round input data to a specified number of decimal places.
10. Specify Decimal Handling to round or truncate the input data to the number of decimal places specified in step 9. By default, the final decimal position of numeric and big numeric values is rounded up if the input data has more decimal positions than the layout field.
    - Rounding Example—If the number of decimals selected is two, then the number 34.255 is rounded to 34.26.
    - Truncating Example—If the number of decimals selected is two, then the number 34.255 is truncated to 34.25.

Completing the Input Data Section

11. Specify the HTML Field Number to indicate the sequence of the field on the record or line, counting from left to right (1 for the first field, 2 for the second field, and so on).

Advanced Options/Hide Advanced Options

The remaining Input Data fields are advanced options. Click Advanced Options to show the remaining fields. Click Hide Advanced Options to hide the remaining fields.

12. Use On Extraction Error to specify how the system will respond if the input data is missing or does not match the specified encoding type or format/pattern. Select a response from the following list of options:

Option	System Response
Allow Capture Process Failure	Stop processing and report a capture processing error.
Substitute Literal	Use an error value of your choice and assign the value if an extraction error occurs.
Substitute Null	Use Null in place of the value that could not be captured.

13. Error Value is available if Substitute Literal was selected in the previous step. Specify a default value to use if an extraction error occurs. For a date field, enter a date in ISO format.
14. Trim Blanks is available if the specified field type selected is Text or Boolean. Specify if the leading and trailing blank characters should be truncated.
15. Case Format is available if the field type selected is Text. Specify how to convert the text of the case of the characters:

Select	Description
As Is	Does not convert the case of the text.
Lower	Converts the case of the text to all lower case.
Uppercase	Converts the case of the text to all upper case.

16. Click OK.

The lower pane displays the Delimited Layout with the name and the type of the added field.

17. Repeat step 2 to step 18 to add another field.
18. Click Save after adding a field.

Add a Group

A HTML layout can contain fields that belong together. You can define a group for these fields and then add the fields to the group.

You can also specify if the group occurs once or multiple times.

You can define one or more layout groups that need to be extracted by copying the XPATH expression from a HTML parsing tool into the field's "Location" attribute.

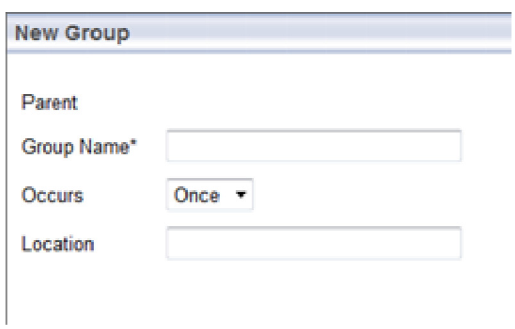
Note that the XPATH expression populated in the Location attribute should be relative to the "Location" attribute of the parent.

XPATH is an expression language that can be used to navigate through elements and attributes in an XML (or HTML) document.

To add a group, complete the following steps:

1. Click the Fields tab.
2. Select the location where you want to insert the group and click Add > Group.

   The system inserts the new group above the selected location. You can also double-click Add in the Fields list to insert a group above where you double-clicked. Use the New Group page to create the new group.



3. Specify Group Name. This must be a unique name that has not been used for a field, group, or sublayout in the current layout.
4. Click OK.
5. To add fields to the group, see "Add a Field" on page 155.

Add a Sublayout

A sublayout in a HTML Layout can be used to define a location within an HTML file which contains groups of fields that occur multiple times in the HTML file. Using sublayouts makes it easier to extract the data.

You can define one or more sublayout that need to be extracted by copying the XPATH expression from a HTML parsing tool into the field's "Location" attribute.

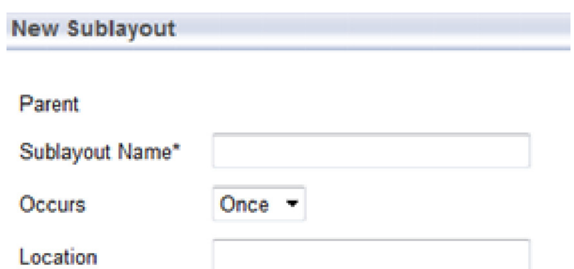
Note that the XPATH expression populated in the Location attribute should be relative to the "Location" attribute of the parent.

XPATH is an expression language that can be used to navigate through elements and attributes in an XML (or HTML) document.

To add a sublayout, complete the following steps:

1. Click the Fields tab.
2. Select the location where you want to insert the sublayout and click Add > Sublayout.

   The system inserts the new sublayout above the selected location. You can also double-click Add in the Fields list to insert a sublayout above where you double-clicked. Use the New Sublayout page to create the new sublayout.



3. Specify the Sublayout Name.
4. Click OK.

Editing an HTML Layout

When you are working with any type of layout, you can perform any of the following tasks:

- Edit a layout, sublayout, group, or field, depending on the layout type.
- Remove a sublayout, group, or field, depending on the layout type.
- Add an advanced path or URL.
- Duplicate the layout.
- Remove the layout.
- Edit Advanced Path/URL.
- Edit Network credentials for accessing Data Layout.
- Edit Proxy Settings for accessing Data Layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts”.

12

Web Service Layouts

A Web Service layout defines access to a SOAP web service operation and its returned data. In order to build the web service layout, you will need to know the SOAP endpoint address, the operation (method) to invoke, and be able to provide the XML text of a full SOAP envelope including the request, which can be tailored to define either constant parameter values or runtime substitution parameters.

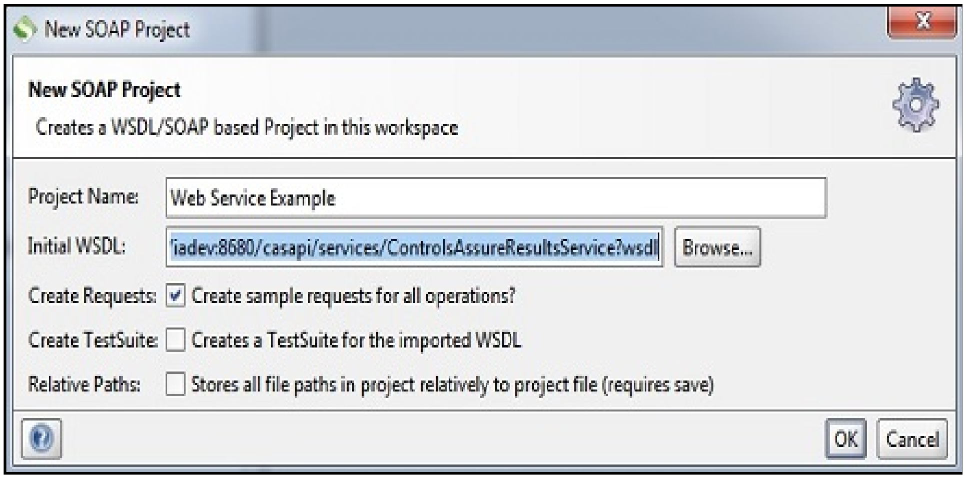
To create a Web Service layout, complete the following steps:

- Generate a SOAP request template
- Create the Web Service layout, and fill in the Details tab
- Customize the SOAP request template and establish input parameters
- Generate fields for the response
- Save and test

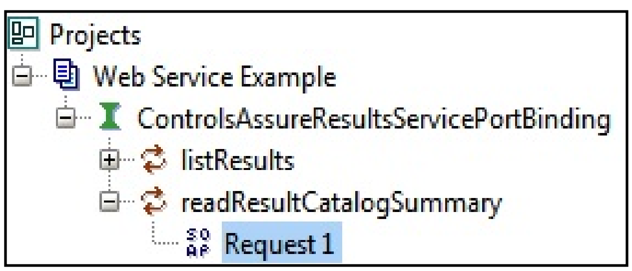
Generate a SOAP Request Template

The primary prerequisite to filling out the Web Service layout in Assure DQ is obtaining a web service SOAP request envelope. Various web services development tools can be used to prepare a SOAP request template. These tools require access to the WSDL, which typically can be accessed through a running web service endpoint. The remainder of this chapter will use the freely available SoapUI tool by SmartBear Software (http://www.soapui.org), though other tools such as the Web Services Explorer within Eclipse J2EE can also be used. Assure DQ provides web services for customers to use to run control points and retrieve results about a control point execution, and the remainder of this chapter will use the web service that obtains results about a control point as an example for a layout.

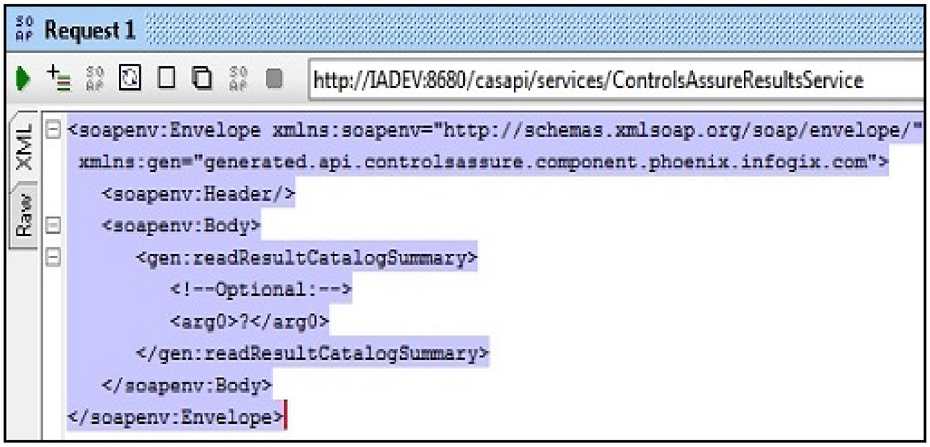
With SoapUI, start a new SOAP project, and refer to the wsdl of the running Assure DQ server:
(http://host:port/casapi/services/ControlsAssureResultsService?wsdl)



You may need to provide authentication credentials to access the Assure DQ web services. Any userid with the "Remote Executor" role can be used in the case of the web services provided by Assure DQ. The SoapUI tool will produce a project with two operations, listResults, and readResultCatalogSummary. Double click the request for the readResultCatalogSummary operation.



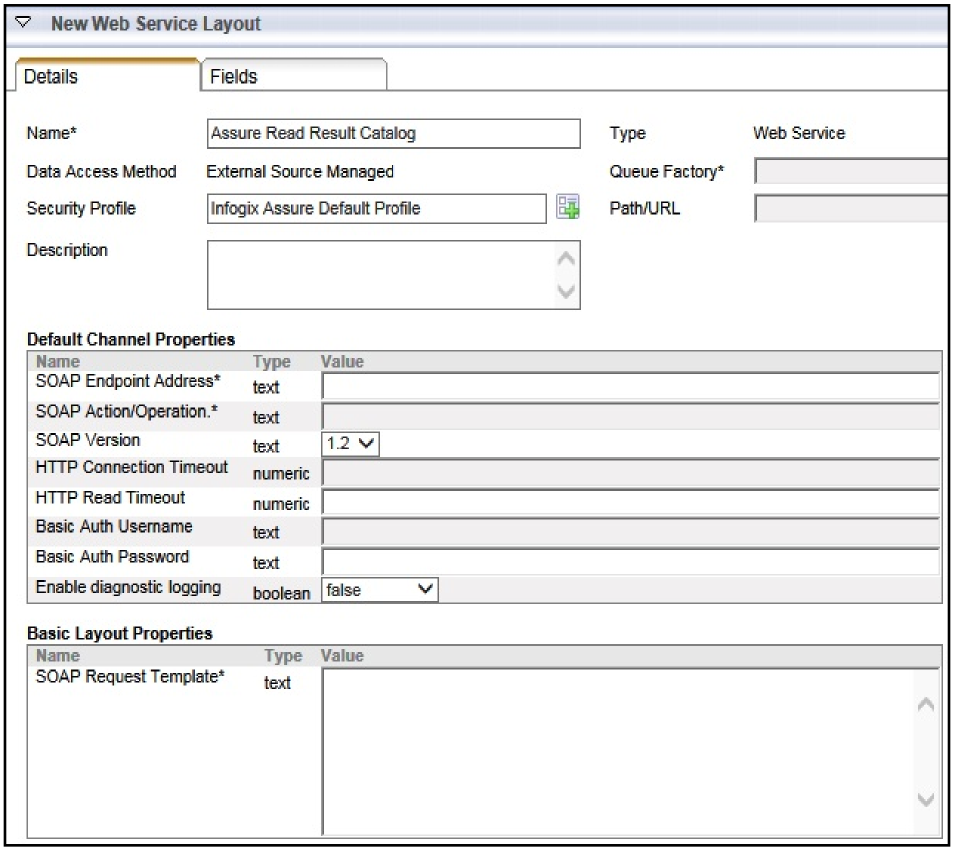
To complete the layout building process, you will need to copy the entire content of the SOAP envelope request, and the endpoint address information.



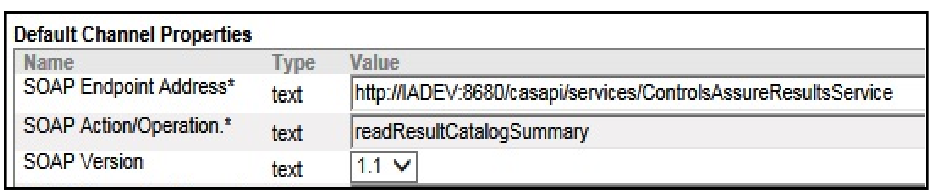
Creating a Web Service Layout

To create a Web Service layout, complete the following steps:

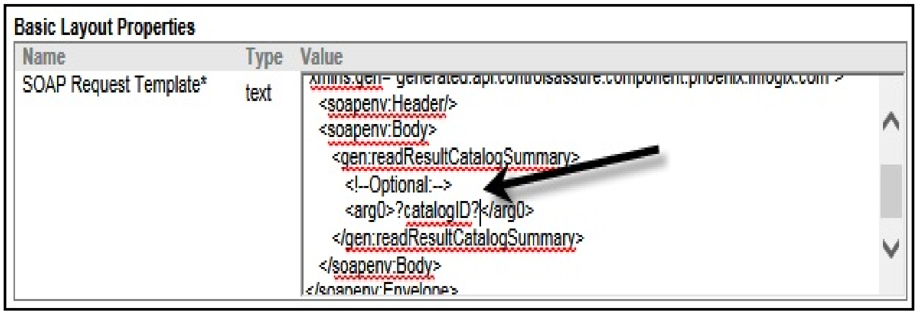
1. Click Rules > Layouts.
2. Click New Layout > Web Service.
   The Web Service Layout Details tab displays.
3. Specify a Name for your layout.



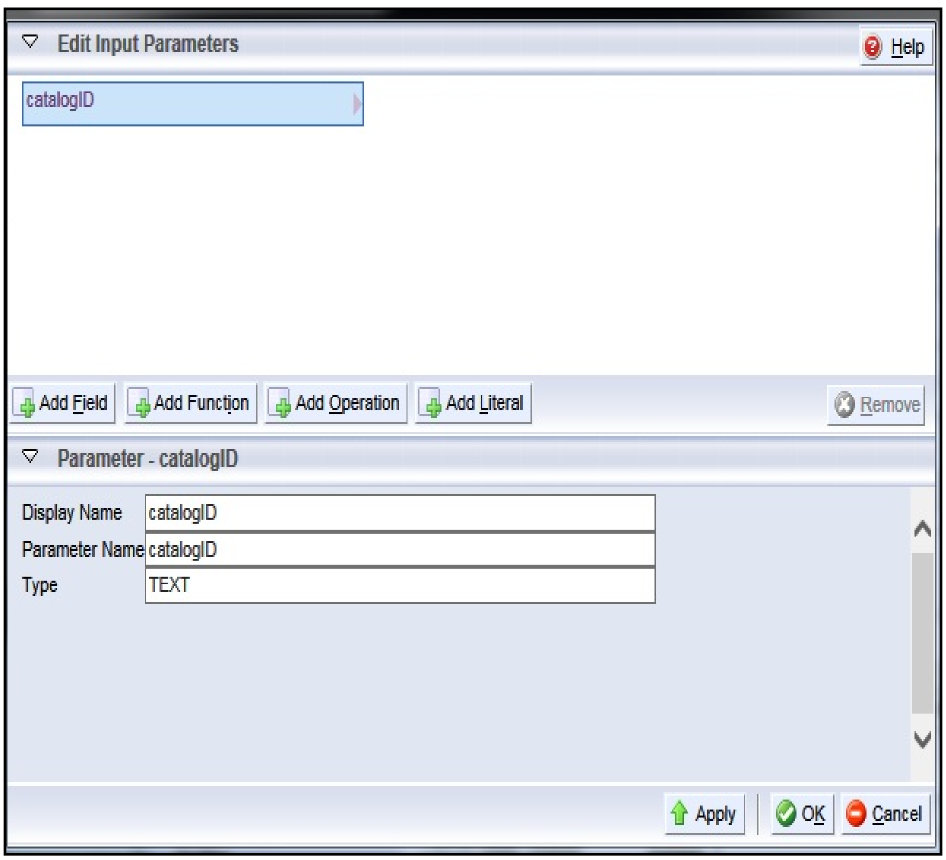
4. Specify the Service Endpoint Address of your Web Service.
   This is the http URL of the endpoint.



5. Copy and paste the SOAP envelope request xml into the template.
   Tailor the template text with constant values for input parameters, or make named parameters that you want to supply at execution time. For the example operation, the one argument necessary is the result catalog ID, which the example below makes a named parameter by using the convention of enclosing the named parameter with a leading and trailing question mark, as in "?parameterName?".



6. Click More > Edit Input Parameters to review and edit the parameters for invoking the Web Service. In order to complete the field generation process, add literal values for a successful web service call. Complete the dialog by choosing OK.



7. For this sample web service provided by Assure, you may have to specify the Basic Auth Username and Password for authentication in the default channel properties. Then, click Save. Click the Fields tab and click Generate. To successfully generate the response layout, you may need to temporarily provide constant literals for any named parameters, because clicking Generate does not ask for values to be provided.
8. Expand any folders and verify that the layout has the fields and field types you expect. As necessary, return to the More > Edit Input Parameters and remove any literals you do not want to have as execution defaults.
9. Test the layout. Verify you can enter your input parameters.

Maintaining and Testing Layouts

When you are working on any type of layout, you can perform any of the following tasks:

- Edit a sublayout, group, or field.
- Remove a sublayout, group, or field.
- Duplicate a layout.
- Remove a layout.
- Test a layout.
- View layout reports.

For more information, see Chapter 13, “Maintaining and Testing Layouts.”

13

Maintaining and Testing Layouts

This chapter describes a variety of tasks you may need to do to maintain, enhance, or test layouts:

- Add an Advanced Path or URL
- Edit Network Credentials
- Test a Layout
- Duplicate a Layout
- Delete a Layout
- Export and Import Layouts
- View Layout Reports

Add an Advanced Path or URL

You can create a dynamic path or URL for an input data source or a runtime data source. You can reference a properties file, apply conditional logic, and substitute runtime values for any part of the path. The system can then determine the appropriate path or URL to use at runtime.

When you create a dynamic path or URL, use one of the following user property functions:

- Userprop_t('propertyfile', 'propertyname') to retrieve text.
- Userprop_n('propertyfile', 'propertyname') to retrieve numerics.
- Userprop_b('propertyfile', 'propertyname') to retrieve Boolean values.
- Userprop_d('propertyfile', 'propertyname') to retrieve dates.

Once you select the function, you can assign the following:

- Property file name.
- Name of the parameter that defines the value to retrieve.
- Default value to use if the value is not found (optional).

To add an advanced path or URL, complete the following steps:

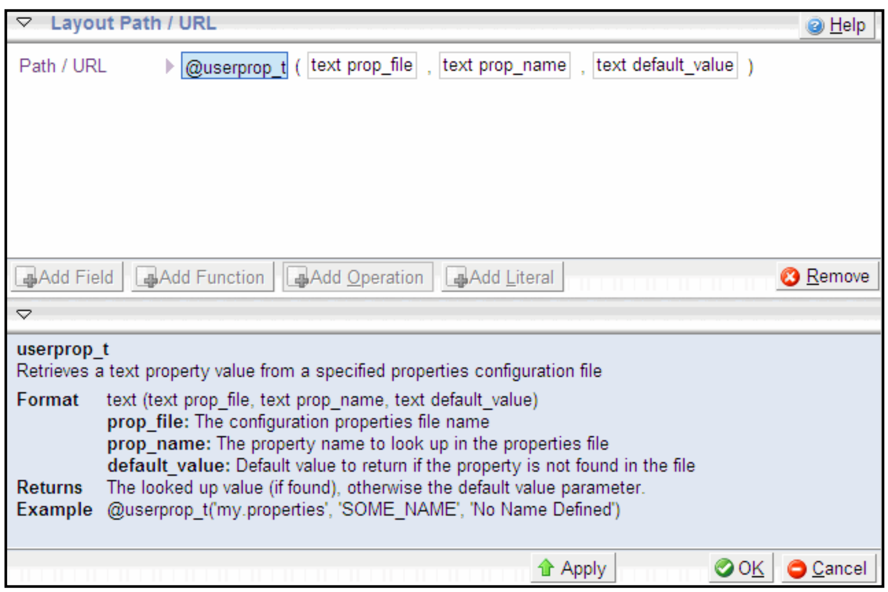
1. Click Rules > Layouts.
2. Select a layout from the Manage Layouts list.
3. On the Details tab, click More > Advanced Path/URL.

4. In the Layout Path/URL window, click Add Function.

5. Select the Userprop_t function from the list of available functions in the bottom pane.
6. In the Signature box, select one of the following signatures:
   - (text prop_file, text prop_name, text default_value)
   - (text prop_file, text prop_name)

   The signature returns a generic value to the system if the value is not located in the properties file.
7. Click Apply.

   The selected signature is added in the top pane.



8. In the top pane, select text prop_file.

9. Click Add Literal and specify the name of the file that contains the values you need for the path or URL.

   It is preferable to use only forward slashes to define paths. If you must use a backslash character, double the backslash (\\).
10. Click Apply.
11. In the top pane, select text prop_name.
12. Click Add Literal and specify the name of the property you want to retrieve from the file.

    The name must match the name you entered in your property file. For example, if your property file contains division=Appliances, then you would enter division as the text prop_name.
13. Click Apply.
14. In the top pane, select text default_value.

    This default value is returned if the property is not found.
15. Click Add Literal and specify a default value to return.

    For example, you could specify “Value not found.”
16. Click Apply.
17. Click OK.

Edit Network Credentials

You can specify network credentials for a data source located at a secure FTP site. Network credentials consist of a user ID and password. This capability is only available for the Data Access Method for a layout that is set to Networked Character/Byte Stream I/O.

If you enter a password value, it is encrypted and stored with the URL. If you prefer, you can enter a literal for the password, visible to all authorized users, or an expression to extract a password value at runtime.

To add or edit network credentials, complete the following steps:

1. Click Rules > Layouts.
2. Select your layout from the Manage Layouts list.

3. Click More > Edit Network Credentials in the bottom pane.
4. Click User ID and then click Add Literal > Text, or create an expression to determine the user ID at runtime.
5. Click Password.
6. Enter the password in the Value field in the bottom pane to create an encrypted password.

   If you prefer, change the Type to Expression and use the "Add " buttons below to create an expression to extract the password value at runtime:

   - Add Field—Select a field from the list, which may include control point runtime fields and load time variables.
   - Add Function—For help about Add Function, click a function name and then click its signature on the right.

     The userprop_t function can be used to reference a configurable variable in a properties file to determine the password for a data source at runtime. To fill in the name of the properties file and the variable name, click each part of the function and click Add Literal. Here is a sample of the syntax to retrieve a file path from a variable named SOURCE_HOME in a properties file named controls.properties:

     @userprop_t('controls.properties', 'SOURCE_HOME')

     Use forward slashes, not backslashes, for compatibility with all platforms.

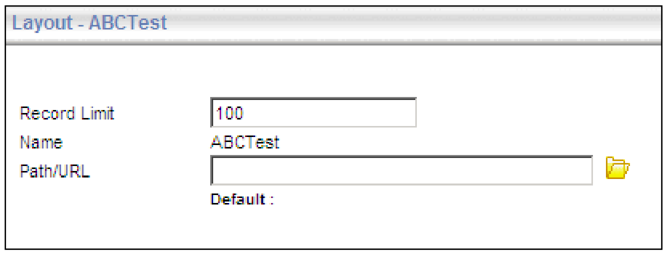
     To reference a properties file, the file must be set up in the configuration folder of the server where capture processing and client deployments will occur. For more information on setting up this file and Java syntax, see the Help topic on Dynamic Paths or URLs for Data Sources.
   - Add Operation—This button lets you add operations. For more information, see the Using Operators help topic.
   - Add Literal—For Type, select the type of literal to add:
     - Text for text, special characters, and blank spaces
     - Numeric for numbers and optional decimal point
     - Boolean for a true or false condition

     If you add a literal, insert a value for the literal, or, if you specified Boolean as the type, select true or false.

Test a Layout

You can perform a layout test to determine if the layout correctly captures the data. To test the layout, complete the following steps:

1. Click Rules > Layouts.
2. Select the layout to test from the Manage Layouts list.
3. Click Test Layout.



4. Record Limit specifies the number of records or rows to extract.

   You can specify up to 999 records.
5. Use the default Path/URL or specify the full path or URL for the input source. Use forward slashes, not backslashes, for compatibility with all platforms. You can select a file from the last ten files used or choose a file from the test data repository.

   If API Data is the Data Access method specified on the Layout Details tab, specify the full path or URL for a file that contains a single, sample API transaction.
6. Click Run.
7. Click View Test Results to see the results of the layout test, which show whether the layout parses the data correctly.

   The test indicates any field-level extraction errors. You can print the report or generate a PDF.
8. If an error occurs that prevents the test, the system issues an error message and does not generate the test results. You can access information to resolve the error, or you can email the report to specified email addresses by completing the following steps:
   a. Click View for information to resolve the error.
   b. Click Error Details to view the detailed error report and to email the report to Infogix and other specified email addresses.

Duplicate a Layout

You can create a new layout based on an existing layout by completing the following steps:

1. Click Rules > Layouts.
2. Select the layout to duplicate from the Manage Layouts list.
3. Click Duplicate.
4. In the bottom pane, specify a new layout name in the Name field.
5. Click Save.
6. Edit the layout properties as needed.

Delete a Layout

If a layout is no longer needed, you can delete it. Review the Reference Report for the layout before you delete it to make sure that the layout does not have any dependencies. If the layout has dependencies, you cannot delete it until the dependencies are removed. To delete one or more layouts, complete the following steps:

1. Click Rules > Layouts.
2. Select the layout(s) to delete from the Manage Layouts list.
3. Click Delete.
4. Click OK to confirm that you want to delete the layout(s).

Export and Import Layouts

The export and import capabilities in the user interface enable you to back up or copy layouts from one instance of Assure DQ to another. The export process creates a ZIP file that contains the layouts of your choice. The export file also includes references to any dependent or related layouts. The import function verifies that the referenced layouts exist in the target environment. In addition, the import function indicates whether the layouts in the export file will replace existing ones in the target environment. You can cancel the import if you are concerned about missing referenced layouts or if you do not want to overwrite existing layouts.

A command line utility for importing definitions (including layouts) is also available. See the *System Administrator's Guide* for more information.

Exporting Layouts

The export function creates a ZIP file of one or more layouts and references to any other dependent layouts. The file also includes the names of the security profiles associated with the layouts. To export layouts, complete the following steps:

1. From the Rules menu, select Layouts.
2. Optionally, filter the list of layouts.
3. Select the layouts to export.
4. Click Export.

   You will be prompted to save a ZIP file containing the layouts for export. After you choose to save the file, you can accept a default directory and file name or specify different ones. The default name of the ZIP file is layoutruleexport.zip.

Importing Layouts

You must be a superuser or an integrity rule administrator to import layouts. When you import layouts, the system automatically unzips the export file and checks to see if any related definitions are missing from your target environment. If these elements are missing, you can still import the layouts, but references to the missing definitions will be removed. To import layouts, complete the following steps:

1. From the Rules menu, select Layouts.
2. Click Import.
3. Browse for the ZIP file to import and click Open.

   The default name of the ZIP file is layoutruleexport.zip.
4. Click Open in the top pane.

   The system lists the layouts included in the ZIP file. The Action column indicates whether the layouts in the ZIP file are new or will replace existing layouts in the current environment.
5. If you do not want to replace existing layouts, click Cancel to stop the import.
6. Review the list of any missing security profiles or dependent layouts in the bottom pane.

   These existed in the original export environment, but are not in the current import environment. You can still import the layouts, but references to the missing dependent layouts will be removed.

If you import a layout with a security profile that does not exist in the current environment, the system applies the default profile. Security profiles determine which groups and users can access and change layouts.

7. Click cancel if you want to stop the import because dependent layouts are missing.

   You can return to your export environment and export the missing layouts.

8. Click Import when you are ready to bring the layouts into the current environment.

   The system will remove references to any missing dependent layouts.

   If you import a layout with a security profile ID that exists in the target instance, the permissions associated with that profile are assigned to the imported layout. If you import layouts that do not exist in the current environment and that lack a security profile because they are from an older version of Assure DQ, the system applies the default security profile.

View Layout Reports

There are a number of reports that you can use to find out information about a particular layout. Save the layout before viewing a report to include any recent edits made to the layout.

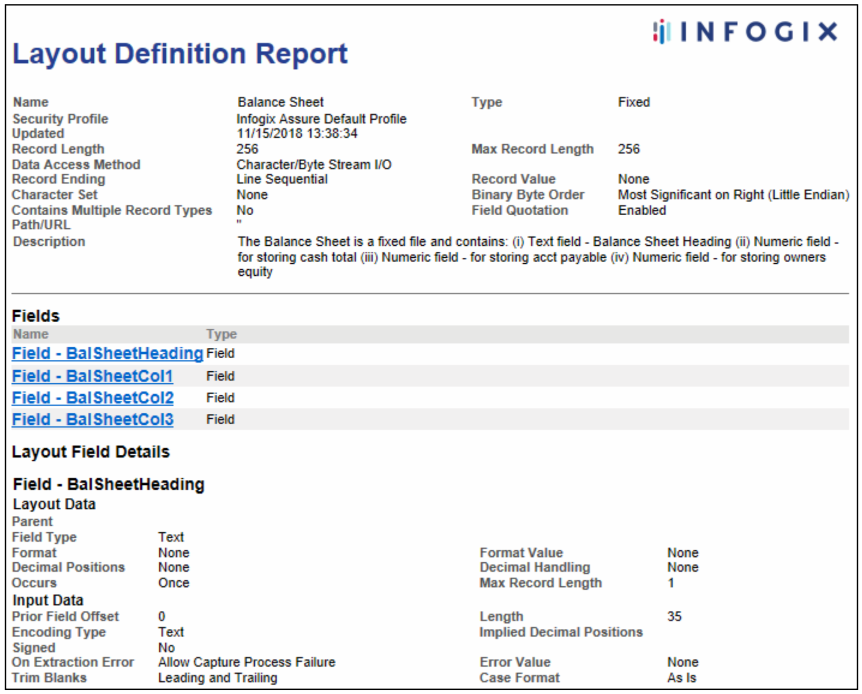
View the Layout Definition Report

The Layout Definition Report shows detailed information for the selected layout, including the name, description, type, and the date and time of the last update.

To view a Layout Definition Report, complete the following steps:

1. Click Rules > Layouts.
2. Select a layout.

3. Click More > View Definition Report in the bottom pane.



4. Under Fields, click a field name to view its details.
5. To create a PDF of the Definition Report, click Generate PDF.
6. To print the report, click Print.
7. When you finish viewing the report, click Close.

View the Layout References Report

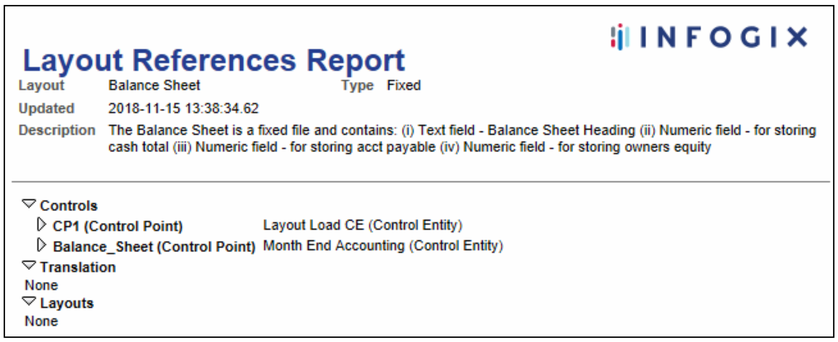
The Layout References Report lists the control points and translation tables that use the selected layout. Review the report before you delete the current layout or any of its fields, groups, or sublayouts to ensure that they are not in use. You can also use the report to troubleshoot problems encountered during translation or control point execution. The report has the following three sections:

- Controls, which lists the control points that use the current layout. The Source name associated with the layout at the control point is shown, along with each layout field referenced on the control point's Capture/Extract tab.
- Translation, which lists the external translation tables that use the current layout, along with the layout fields used for translation.

- Layouts, which lists reference layouts and reference sublayouts used by the current layout.

To view a References Report, complete the following steps:

1. Click Rules > Layouts.
2. Select a layout.
3. In the bottom pane, click More > View References Report to view the Layout Reference report in a new window.



4. Click the arrowhead adjacent to the Controls, Translation, or Layouts headings to expand or collapse the section.
5. Click Expand All to expand all the sections.
6. Click Collapse All to collapse all the sections.
7. To print the report, expand all the sections and click Print.
   The report prints exactly as displayed on the screen.
8. After you view the report, click Close.

Glossary

A

API data
API data is byte or character data supplied through an API (application program interface).

B

big numeric
Big numeric is a layout field type for numeric values greater than 15 digits.

Boolean field
Boolean fields contain a value of true or false and can be set and checked to determine whether or not to apply particular extractions, validations, or results.

C

character/byte stream I/O
Character/byte stream I/O refers to byte or character data accessed by standard Java input/output methods.

control data
Control data consists of data values stored in control fields in the database or persistent data from a control entity, organized by control entity and control point run. This does not include reports or results of control runs.

control entity
A control entity is a business process or unit of business data targeted by controls.

control fields
Each control entity has its own set of control fields that hold data for applying controls and for reporting, analysis, and audit use. Control points share and update the data in these fields, as needed. See also identity fields.

control points
Control points are critical points in business information processing where automated controls are used to validate information. These points include anywhere information is input, output, updated, combined, or transferred between platforms, applications, or systems.

control value
A control value is the numeric, text, tally, Boolean, or other data value stored in a control field.

controls
Controls automate the capture and comparison of control values to validate the information content, process, and system. Controls then trigger automatic responses to the validation results.

D

database
Database may refer to the database where control data and control results are stored. It can also refer to a relational database used as a data source for control processing or translation, or as the destination for exported control data.

database layout
A database layout specifies connection information or the JNDI name for a database used as a data source or external translation table. The layout also specifies column locations, data types, and an SQL query for retrieving data of interest.

decimal positions
Decimal positions are the number of digits that appear to the right of the decimal point for display/reporting purposes.

Definition Report
A Definition Report shows the rules that are defined for a specific item.

delimited file
Delimited files contain variable length data fields separated by commas or other characters.

F

file monitor data
File monitor data captures information about files within a directory on the file system.

fixed file
Fixed files contain fixed length records, or variable length records containing fixed length and positional fields.

function
A function is a computer subroutine designed to accomplish a specific task that uses your data as input.

I

inbox
The inbox in the user interface is similar to an email inbox. Each user sees a list of alerts in their inbox corresponding to recent control results of interest. Clicking an alert displays details about the control result.

ISO 8583 data source
This data source is a Financial Transaction Card Originated Message, as defined by ISO 8583 standards.

J

Java Object data source
A Java Object data source is a Java class file in byte code or a serialized Java object.

JMS Message Queue data
JMS Message Queue data is byte or character data supplied through a JMS queue.

L

layout
A layout defines the physical and logical structure of an input data source or translation table. The layout also specifies the access method and location of the data.

lenient format
For numeric or big numeric layout fields, the lenient format option strips out non-numeric characters other than a decimal point.

M

Microsoft Excel data source
A Microsoft Excel spreadsheet can be a data source for a control point execution.

N

networked character/byte stream I/O
Networked character/byte stream I/O is a data access method for input stream byte or character data accessed via URLs with protocols such as ftp or http.

R

record I/O
Record I/O is a data access method for IBM or Micro Focus COBOL record-oriented inputs.

record type
If a fixed, delimited, or ISO 8583 data source contains more than one type of logical record, you can define a different layout for each record type. These individual layouts are called record types.

Referenced By Report
A Referenced By Report lists other control entities that depend on the current control entity.

References Report
A References Report lists dependencies for a specified item.

S

sublayout
For fixed and XML data sources, a sublayout identifies a set of fields that you want to uniquely identify for control processing. For Java Object data sources, it identifies a collection of Java objects. For all data source types, a sublayout can also define data in a field that is in a different format and references another layout.

X

XML file
An XML file is an input data source or translation table with XML tags delimiting groups and fields.