



Enhancing Email Notifications

IBM-Rational ClearQuest

Pavel Dubovitsky
pdubovitsky@yahoo.com

Let's **build** a smarter planet.



Agenda

- Limitations of the ClearQuest Email package
- Email Notification package – what is it?
 - Features and Configuration
 - Delivery Modes
 - Subscriptions
 - Reminders
- Comparing to Email and EmailPlus packages
- Demo
- Questions

ClearQuest Email – Original Package Limitations

- Configuration
 - Needs to be configured on every client (and can be turned off by end user)
 - Changing configuration is a problem
 - Cannot be modified or turned off on a test database
- Limited rule controls
 - Field change, states, or actions
 - Queries - frequent source of performance issues
- Content type
 - Cannot indicate content type
 - Cannot specify message Character Set

ClearQuest – Original Package Limitations

- Content restrictions
 - Can include fields of current record only
 - Can use old or new field values only
 - Cannot use different font styles, effects, or colors
 - Cannot use RTF or HTML formatting, images, or tables
 - Cannot include record's URL or links to external resources
 - Cannot include descriptive information or instructions

ID: SDLC00000013

Headline: Configuration error

Severity: 2 – Critical

Submitter: fd0k5nr

Owner: fd0b3rl

Description: Cannot configure session timeout. Configuration value is ignored.



What are my options?

- Still use the original package
 - Add unnecessary “notification” fields (user full name, instructions, URL, etc)
 - Populate these fields in hook
 - Use “notification” fields in Email Rules
- Implement your own solution
 - Time restrictions
 - Support consequences
- Use one of the new packages
 - EmailNotification
 - EmailPlus



EmailNotification Package – what is it?

- It is not a solution that is provided or supported by IBM-Rational
- It is an alternative ClearQuest package that is free of the original solution limitations
- Can be configured per user database; test and production can use different settings
- Does not require clients' configuration
- Provides advanced email triggering conditions
- Allows creating notification templates using entire ClearQuest environment
- Permits message envelope modification
- Performs reliable message delivery
- Reminders (Timed Notifications)
- Enhancements without schema modification
- and more...

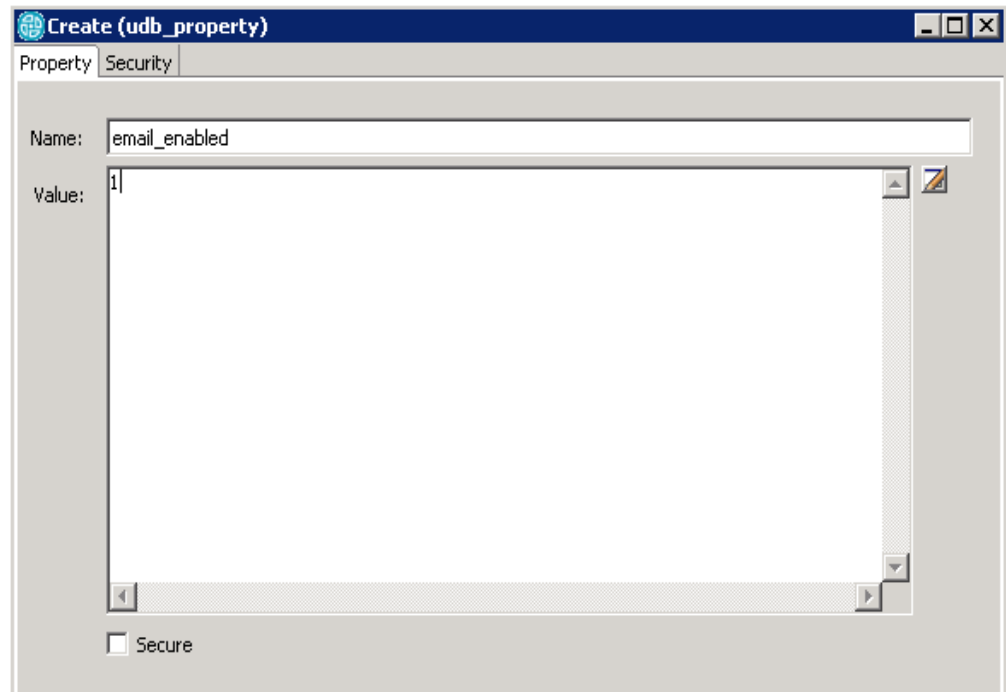


Package Components

- UDBProperties supplementary package (installed automatically)
 - **udb_property**
 - Persistent configuration settings
 - **udb_visibility**
 - Security context capability for udb_property and Email_Notification_Rule records
- EmailNotification package
 - **Email_Notification_Rule**
 - Notification conditions and templates
 - **en_email_message**
 - Message queue
- EmailSubscription package (optional)
 - **Email_Subscription**
 - End user self-subscription functionality

Configuration

- Configuration is saved in udb_property stateless records
- Property values can be accessed in email notification rules using GetProperty function
- Property content can be encrypted (secure property)
- Configuration can be easily exported/imported
- At least two property values must be defined
 - email_host – SMTP relay
 - email_enabled



Email Notification Rule Conditions

- Actions and field change conditions
 - Action list is not limited to record type actions
- Advanced conditions – arbitrary complex expressions using environment, field values, package and user defined functions
- Configurable message priority
 - > 0 – High
 - == 0 – Normal
 - < 0 – Low
- Rules evaluation order can be defined

Update Notify Assignee (admin,DEMO@SAMPL)

Main | Header | Subject and Body | Security

Name: \Notify Assignee Record Type: Defect

Order: 10 Active

Actions: [] Field Change: Owner

Condition: \$owner ne \$UserLoginName

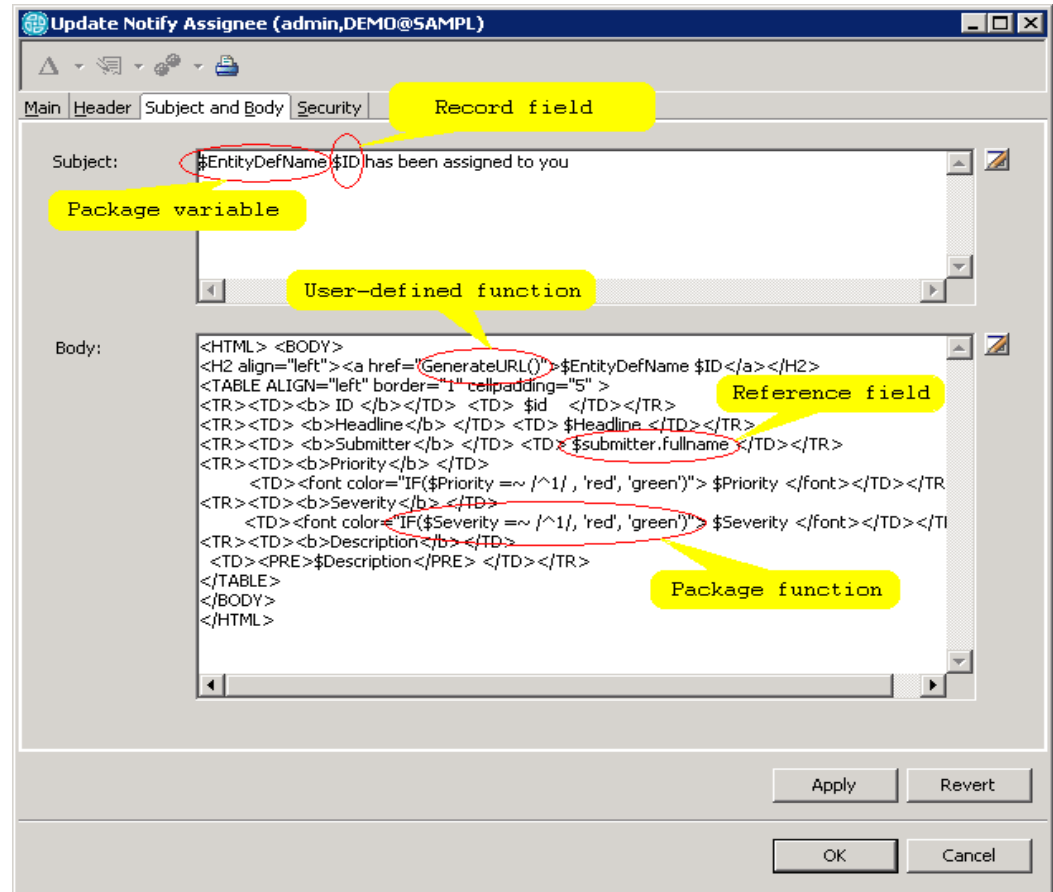
Priority: '2-Give High Attention' cmp \$Severity'

Apply Revert

OK Cancel

Message Template

- Message subject and body is in free text format with embedded
 - Package variables
 - Current record field values
 - Related record field values
 - Database properties
 - SQL statements
 - Functions (Perl, package, schema and database user-defined functions)



Variables and Functions

- Package variables or database properties
`${EmailNotificationRuleName}` or ***`$EmailNotificationRuleName`***
`$Database_property_name`
- ClearQuest Fields
`$owner`
`$owner.fullname`
- Functions
***`<font color="IF($Priority =~ /^1/ , 'red',
IF($Priority =~ /^2/, 'green', 'blue'))">`***

Operators

Operators	Comments
! ~ + -	Unary operators
=~ !~	Binding. Regular expression with modifiers (/.../ [misx])
* / % x	Multiplicative operators
+ - .	Additive operators
gt ge lt le > >= < <=	Relational operators
eq ne cmp != == <=>	Equality operators
&&	C-style logical AND and OR operators



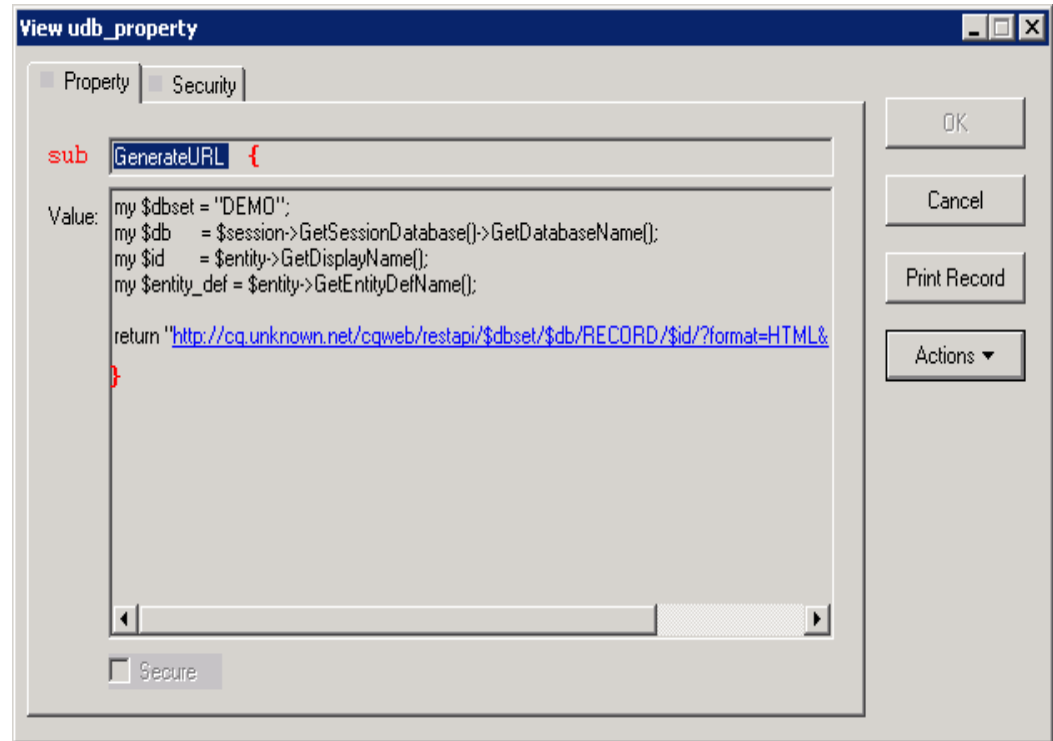
SQL Statements

- **SQL(<statement>)**
- Example:
get email addresses of all users that are listed in the record's history

```
SQL( "SELECT    distinct T1.email  
      FROM      users T1, history T2  
      WHERE     T2.entity_dbid = $dbid  
              and T2.user_name = T1.login_name ")
```

User-Defined Functions

- In addition to functions defined in ClearQuest schema, administrator can define functions using database properties
 - No schema upgrade is required
 - Functions can be easily exported/imported and reused in other installations or databases
 - ClearQuest Perl API is available
- No schema or database upgrade is required for enhancing package functionality



Message envelope

- Address fields
 - Plain text, ClearQuest fields, and functions can be used in template From, To, CC, and BCC fields
 - One email address per line format
- Additional header information can be used to specify
 - Content type and character set
Content-type: text/html; charset=us-ascii
 - Return address
Reply-to: email@address.net
 - Set reminder
Reply-by: Wed, 05 Oct 2011
 - MIME-Multipart messages with attachments, embedded images, and many other applications

Update Notify Assignee (admin,DEMO@SAMPL)

Main Header Subject and Body Security

From: []

To: \$owner.email

CC: IF(\$Severity eq '1-Critical', 'big_boss@email.net')

BCC: []

Header Add-in: Content-type: text/html; charset=us-ascii

Message content specification

Apply Revert

OK Cancel

Email Notifications

- Flexible notification template
- No content restriction
- Easy to create, maintain, and enhance
- Access to advance email functions
- Centralized configuration
- Reliable message delivery

Defect SAMPL00000016 has been assigned to you

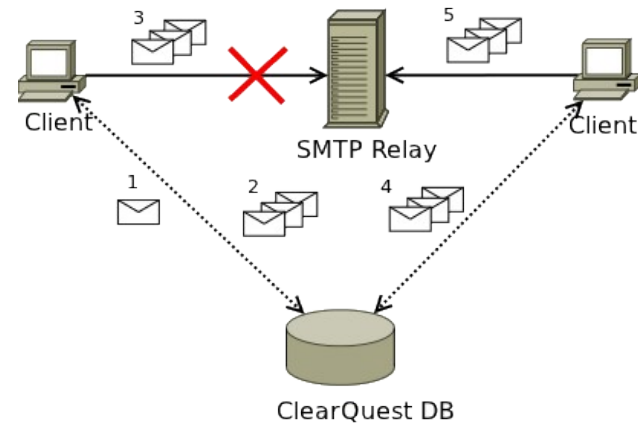
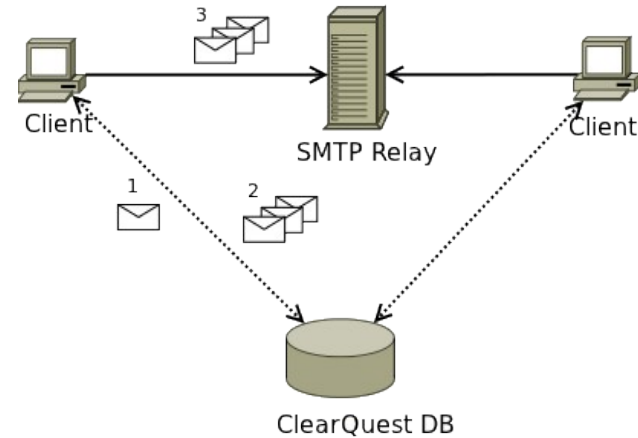
Defect SAMPL00000016

ID	SAMPL00000016
Headline	too many spaces in "change due" field
Submitter	Lead Full Name
Priority	2-Give High Attention
Severity	1-Critical
Description	Please resolve immediately



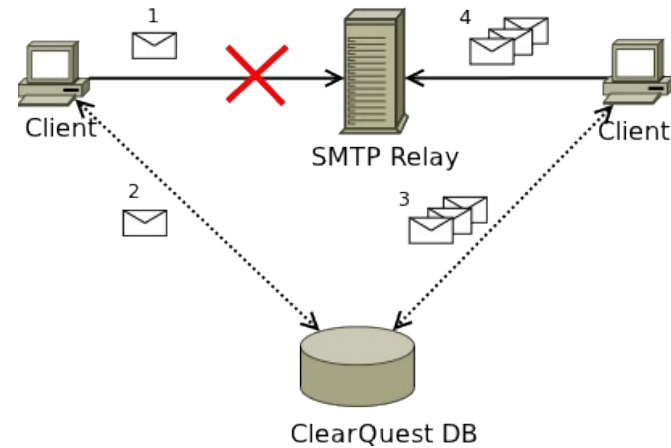
Delivery Mode - Deferred

- Deferred (default delivery mode)
 - Email Messages are stored in the database (1)
 - Retrieved at the end of rules evaluation (2)
 - Delivered to mail host (3)
- When mail host is unavailable
 - Exception occurred while sending mail, error was recorded in the database (3)
 - The same or another client will retrieve saved messages later (4)
 - And deliver them to the mail relay (5)



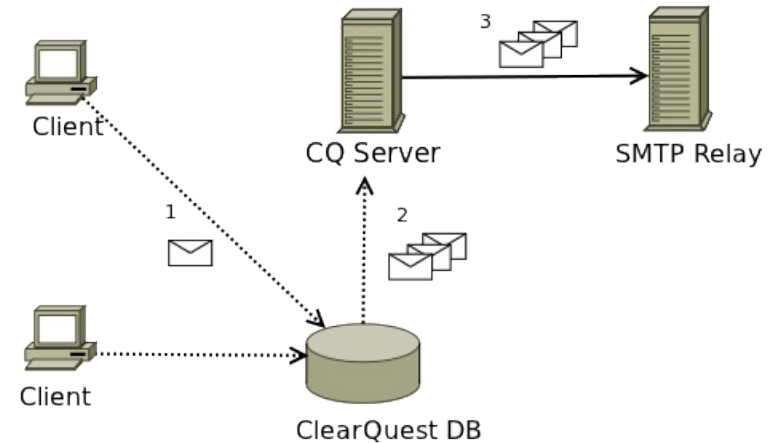
Delivery Mode - Light

- Light Delivery
 - Generated email is forwarded to SMTP host immediately, without storing a copy in the database (1)
 - If email host is unavailable, a copy of the message is stored in the database (2)
 - Later, it will be retrieved by the same or other client (3)
 - And delivered to the mail relay (4)



Delivery Mode - Queue

- Queue delivery
 - Generated notification messages are stored in the database (1)
 - No delivery is attempted on the client
 - Delivery script is running periodically on the server retrieving stored messages (2) and delivering them to the main server (3)
- No interference with antivirus or security software installed on clients
- Useful to develop and debug notification rules in test database without disturbing users
- Can be used to implement alternative delivery methods



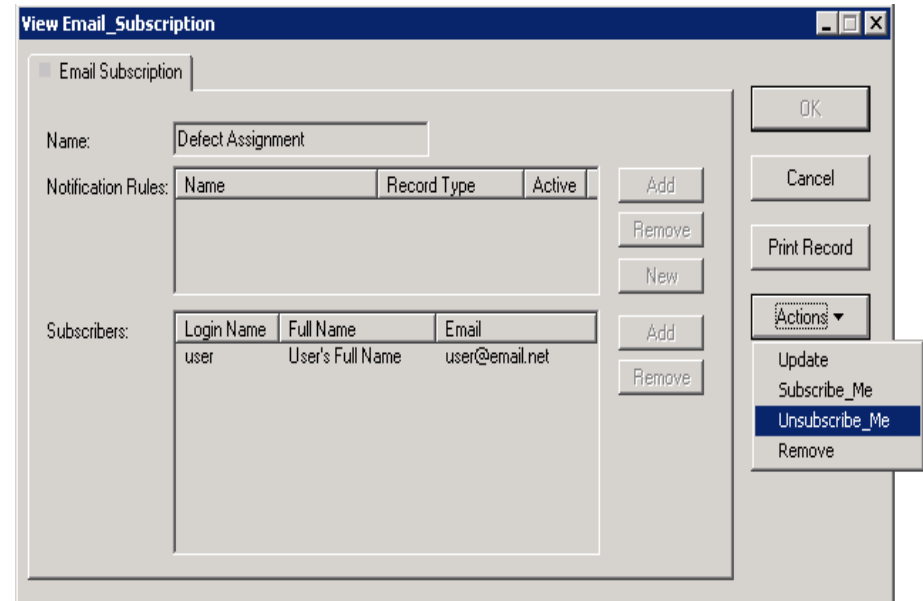
Security

Record Type	Action	Permissions
udb_visibility udb_property Email_Notification_Rule	Submit	Superuser Security Administrator Default Security context group member
	Update	Superuser Security Administrator Security context group member
	Remove	Superuser
en_email_message	Submit	Superuser A member of group specified by EN_AdminGroup database property
	Update	Superuser A member of group specified by EN_AdminGroup database property
	Remove	Superuser A member of group specified by EN_AdminGroup database property



Email Rules Self-subscription

- End users self-subscription is available as a part of Email Subscription package
- Administrators can create Email_Subscription records and add Email Notification rules to them
- Users can manage subscription by using **Subscribe_Me** and **Unsubscribe_Me** actions



Reminders

- Email Notification rules can be used to configure Timed Notifications: due date reminders, assignment reminders, etc.
- External script is used to
 - Narrow scope of records that can be a subject for reminders. For example, by excluding closed records from consideration
 - Execute dummy action on each record within the scope
 - Email notification rules are evaluated, and email is generated when notification condition is met.
- TimedNotification.pl script is available on the package web site
 - Can be executed on UNIX or Windows machine where ClearQuest is installed
 - User-defined workspace query or runtime query can be used to narrow records scope

Reminders – Example

- Sending emails on defects that passed due date
1. Add “Defect” record to the ***TN_RecordTypes*** UDB property
 2. Exclude defects in “Closed” state by adding “Closed” line to the ***TN_QueryExcludeStates-Defect*** UDB property (runtime query)
 3. Create a notification rule with **“DailyNotification”** Action and advanced notification condition
`$Due_Date ne " && DateTimeDiff($Due_Date, GetDateTime()) < 0`
 4. Setup scheduler on ClearQuest server to run TimedNotification.pl script with **“DailyNotification”** dummy action name as a parameter

View Email_Notification_Rule

Main | Header | Subject and Body | Security

Name: Defect Due Date Record Type: Defect

Order: Active

Actions: DailyNotification Field Change:

Condition: \$Due_Date ne " && DateTimeDiff(\$Due_Date, GetDateTime()) < 0

Priority:

Buttons: OK, Cancel, Print Record, Actions

Package Setup

- Backup master and user databases
- Install
 - Apply package
 - Enable record types for the package
 - Upgrade user databases with new version of schema
- Configure
 - Provide SMTP server name (email_host property)
 - Enable notifications (set email_enabled property to “1”)
 - Create your first notification rule



Comparison of ClearQuest Email Packages

	Email	Email Plus	Email Notification
Email Templates	N	Y	Y
Advanced Conditions	N	Y	Y
Embedded graphics	N	Y	Y
Package schema-level enhancements	N	Y	Y
Package database-level enhancements	N	N	Y
Reminders	N	N	Y
IBM-Rational support	Y	N*	N



Additional Information

- Package downloads, documentation, tutorials, and examples
<http://cqadmin.org>
- Support forum
<http://forum.cqadmin.org>
- The package available under GNU **Lesser** General Public license (LGPL)
- Your feedback is valuable



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