

Common trouble ticket translation and delivery system: Implementation and deployment details

Spyros Kopsidas
Center for Research and Technology – Hellas
EGEE-SA2

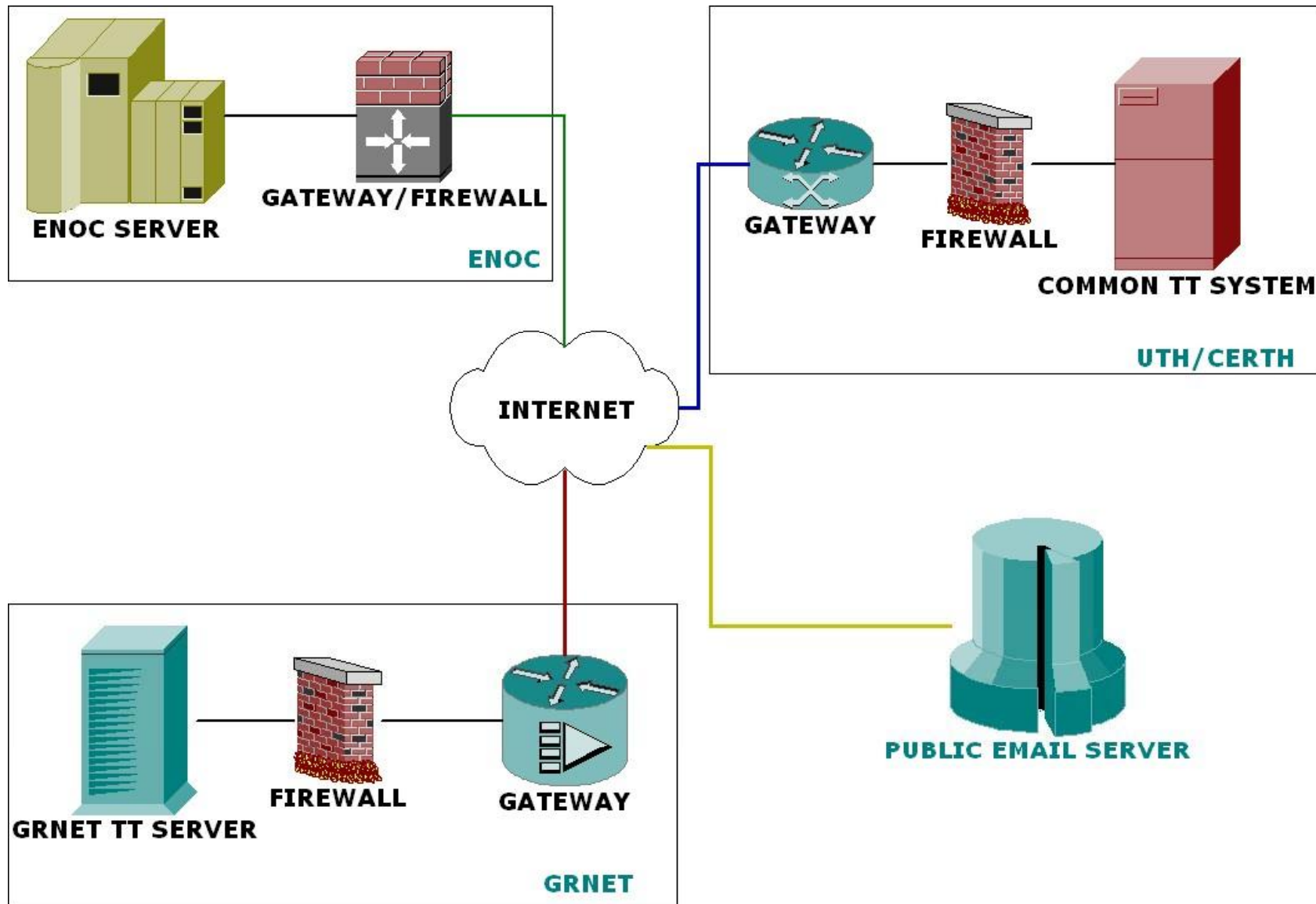
EGEE'08 Conference, Istanbul , 2008-09-24

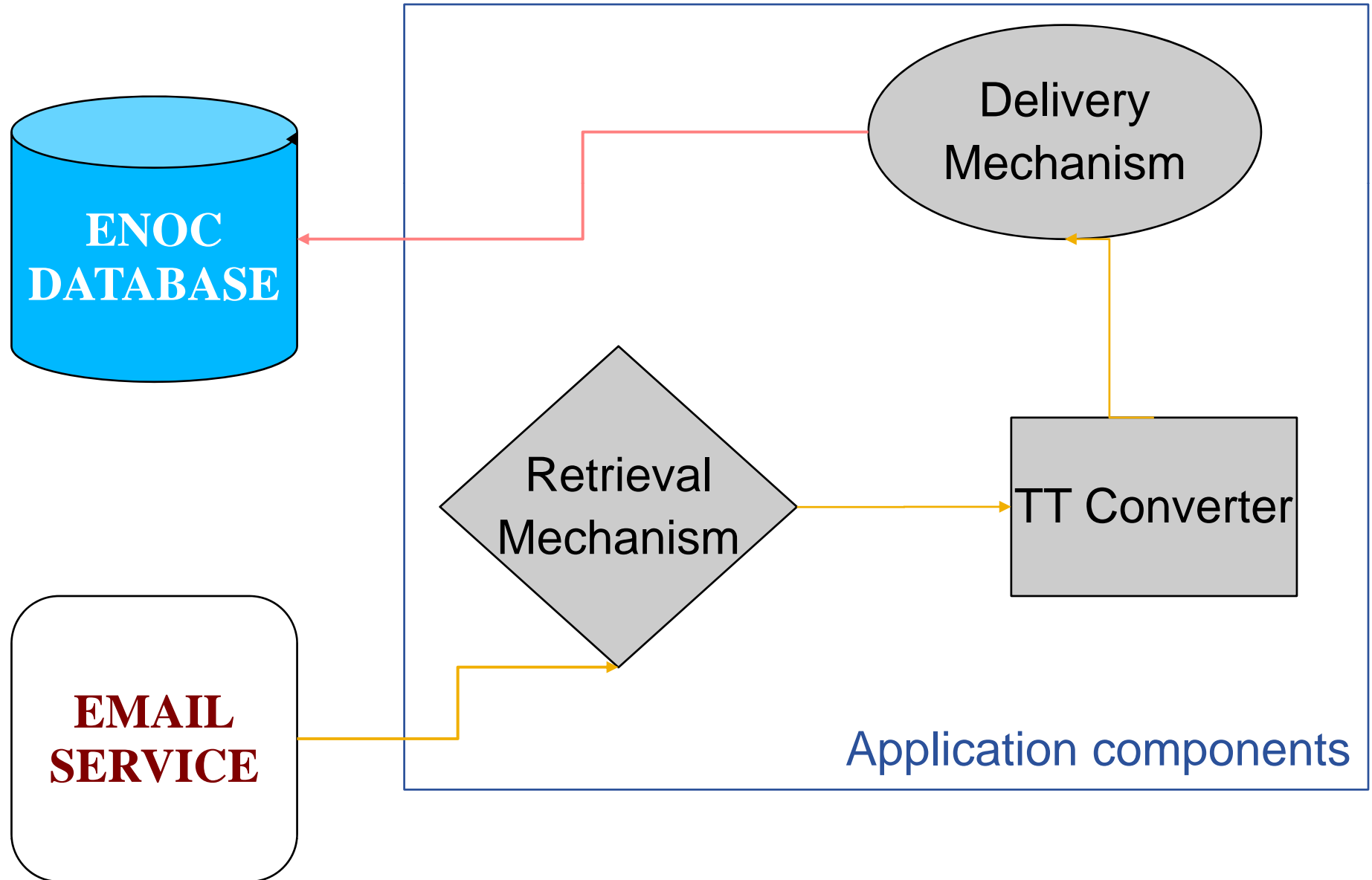
- **There is no common Trouble Ticket format for the NRENs.**
- **There is not a standard language for the Trouble Tickets (i.e. every TT is written in the national language of its origin).**
- **There is not a delivery system for distributing critical TTs to the corresponding NRENs.**

- **Almost every TT format is able to contain the same basic information and data.**
- **Identifying and matching the fields of different NRENs is rather a non resource demanding process.**
- **The ENOC stores the Trouble Tickets of every NREN.**

- **Design and Implementation of a Common Trouble Ticket Translation and Delivery System (GRNET version):**
 - Common Data Model Definition
 - TT retrieval policy (initially via email and eventually via direct database connections to the ENOC)
 - Implementation of the retrieval mechanism
 - Implementation of the TT converter
 - Implementation of the delivery mechanism
 - Implementation of other powerful features (e.g. TT delivery via mobile SMS)

- **MS-Windows XP/2003 Operating System**
- **Borland Delphi for Windows 2007**
- **Delphi Virtual Component Libraries for common procedures (sockets, database connections, etc)**
- **MS-Windows services for supporting the conversion process and the special delivery features.**





```
procedure TForm1.ChilkatMailMan21ReadPercentDone(ASender: TObject;
  percentDone: Integer; out abort: Integer);
begin
  ProgressBar1.Position := percentDone;
end;
// Read email from a POP3 server with progress monitoring.
procedure TForm1.Button2Click(Sender: TObject);
var
  email: IChilkatEmail2;
  bundle: IChilkatEmailBundle2;
  n: Integer;
  i: Integer;
begin
  // A ChilkatMailMan2 ActiveX component was dropped onto the Delphi
  // form, and this became the Form's member variable "ChilkatMailMan21".
  ChilkatMailMan21.UnlockComponent(' ');
  // Set the POP3 mail server hostname, login, and password.
  ChilkatMailMan21.MailHost := 'mail.inf.uth.gr';
  ChilkatMailMan21.PopUsername := 'enoc';
  ChilkatMailMan21.PopPassword := ' ';
  // Read the entire mailbox, leaving the mail on the POP3 server.
  bundle := ChilkatMailMan21.CopyMail();
  if (bundle = nil) then
    ShowMessage(ChilkatMailMan21.LastErrorText);
  // Loop over the emails in the bundle and add the From address
  // and Subject to a list box.
  n := bundle.MessageCount;
  for i := 0 to n-1 do begin
    email := bundle.GetEmail(i);
    ListBox1.Items.Add(email.From);
    ListBox1.Items.Add(email.Subject);
    ListBox1.Items.Add('----');
  end;
end;
```



```

// Read email from a POP3 server and save the downloaded email in an XML file.
// Then load the XML file into a new bundle object.
procedure TForm1.Button12Click(Sender: TObject);
var
    email: IChilkatEmail2;
    bundle: IChilkatEmailBundle2;
    bundle2: IChilkatEmailBundle2;
    n: Integer;
    i: Integer;
begin
    ChilkatMailMan21.UnlockComponent(' ');
    // Set the POP3 mail server hostname, login, and password.
    ChilkatMailMan21.MailHost := 'mail.inf.uth.gr';
    ChilkatMailMan21.PopUsername := 'enoc';
    ChilkatMailMan21.PopPassword := '';
    // Read the entire mailbox, leaving the mail on the POP3 server.
    bundle := ChilkatMailMan21.CopyMail();
    if (bundle = nil) then
        ShowMessage(ChilkatMailMan21.LastErrorText);
    // Save the bundle in an XML file.
    bundle.SaveXml('TT.xml');
    // Demonstrate how to re-load the bundle into a new bundle object.
    bundle2 := ChilkatMailMan21.NewBundle();
    bundle2.LoadXml('TT.xml');
    // Loop over the emails in the bundle2 and add the From address
    // and Subject to a list box.
    n := bundle2.MessageCount;
    for i := 0 to n-1 do begin
        email := bundle2.GetEmail(i);
        ListBox1.Items.Add(email.From);
        ListBox1.Items.Add(email.Subject);
        ListBox1.Items.Add('---');
    end;
end;
end;
    
```

Account Trigger: GRNET TT EGEE

General | Field Extraction | Update Databases | Other Actions | Schedule | Notes

Name: Enabled

Trigger Conditions:
 Separate multiple addresses with ; Use wildcards if required (eg *@mysite.com)

From Address(es):

Received Since: ▼

Importance: ▼

Sensitivity: ▼

Message Contains: Contains Of These Words Or Phrases: (wildcards allowed)

No	Contains
1	
2	
3	

Condition Script: Enabled

After This Trigger Has Processed A Message:
 ▼

OK Cancel Help

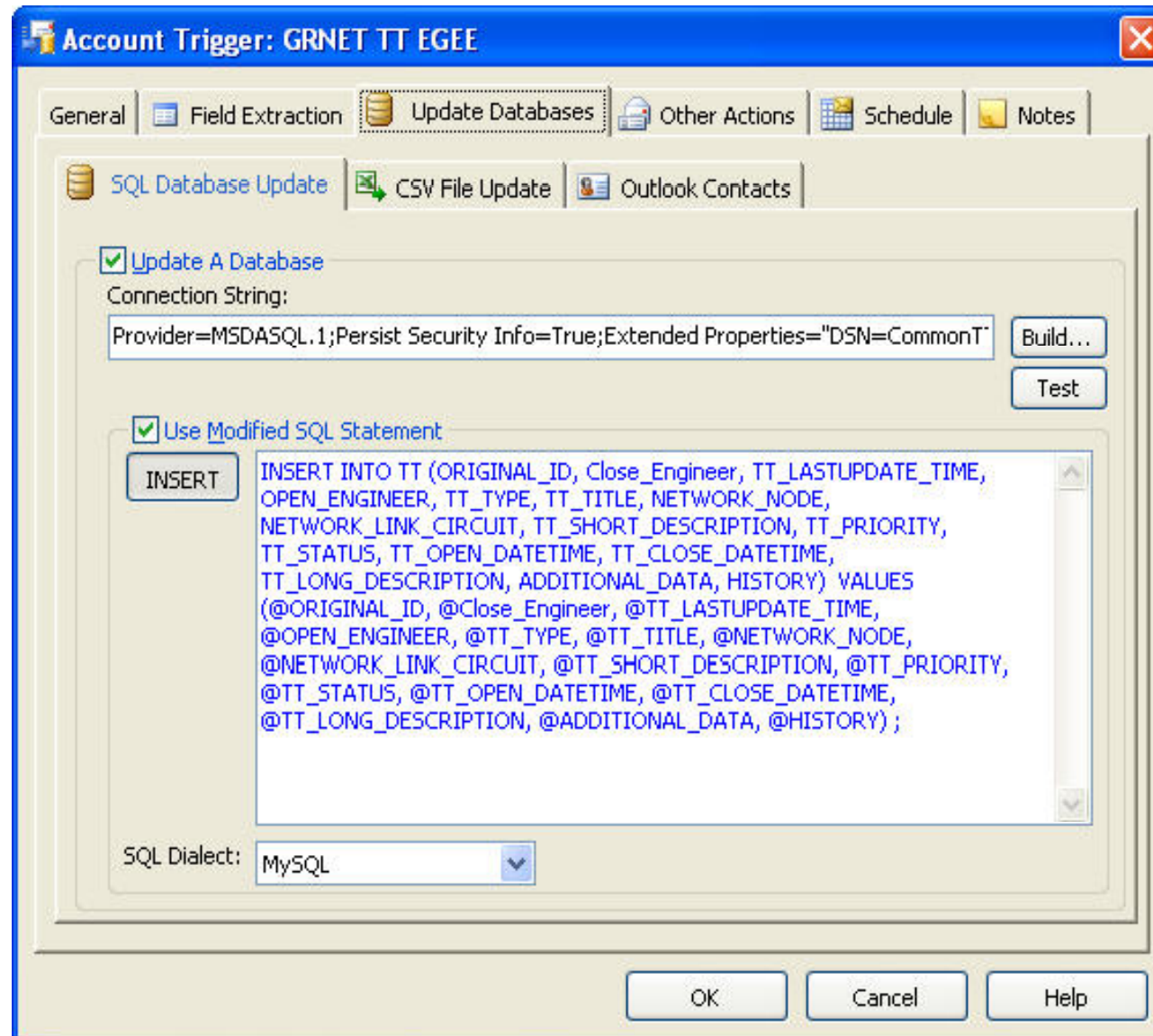
Account Trigger: GRNET TT EGEE

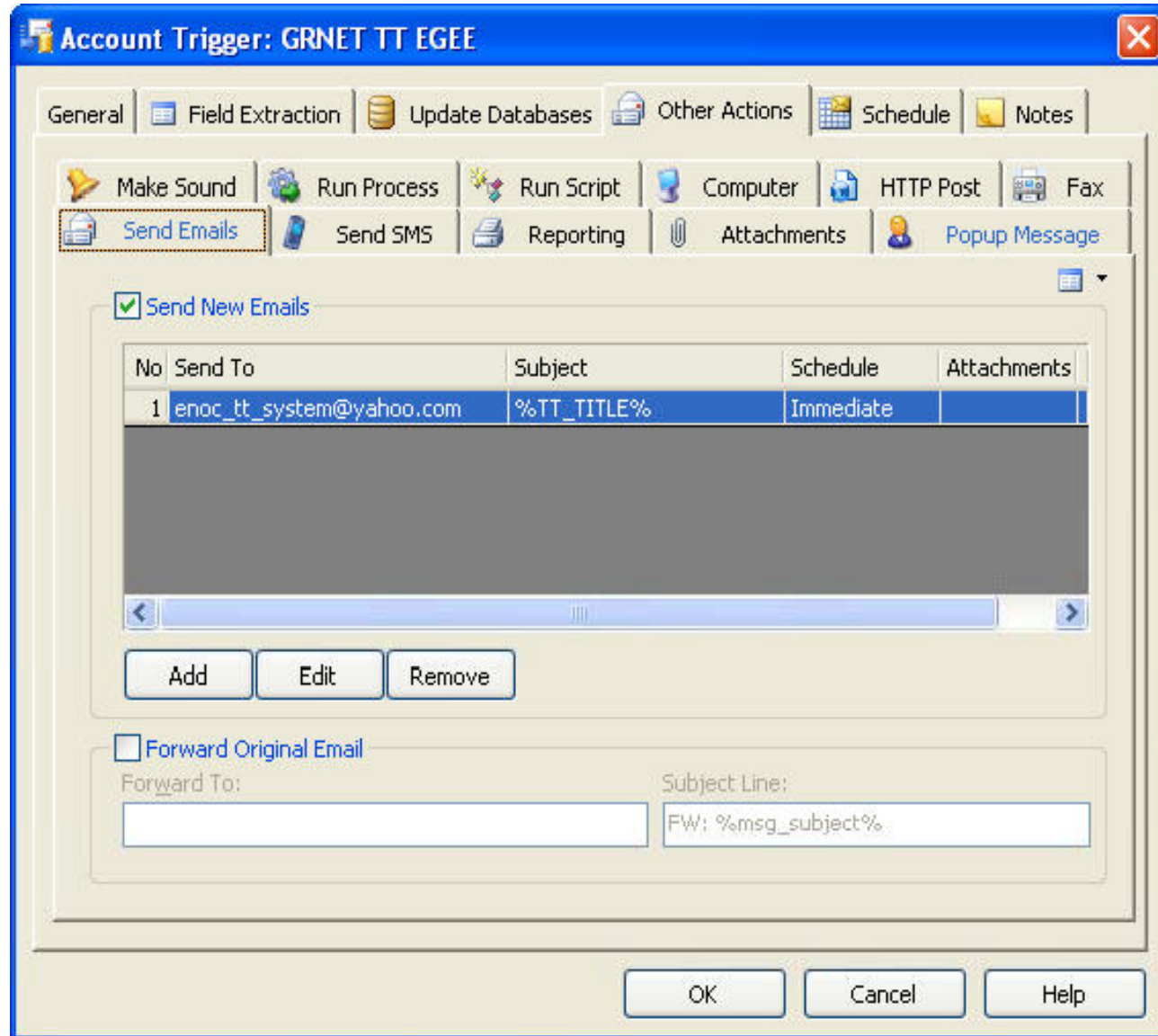
General | **Field Extraction** | Update Databases | Other Actions | Schedule | Notes

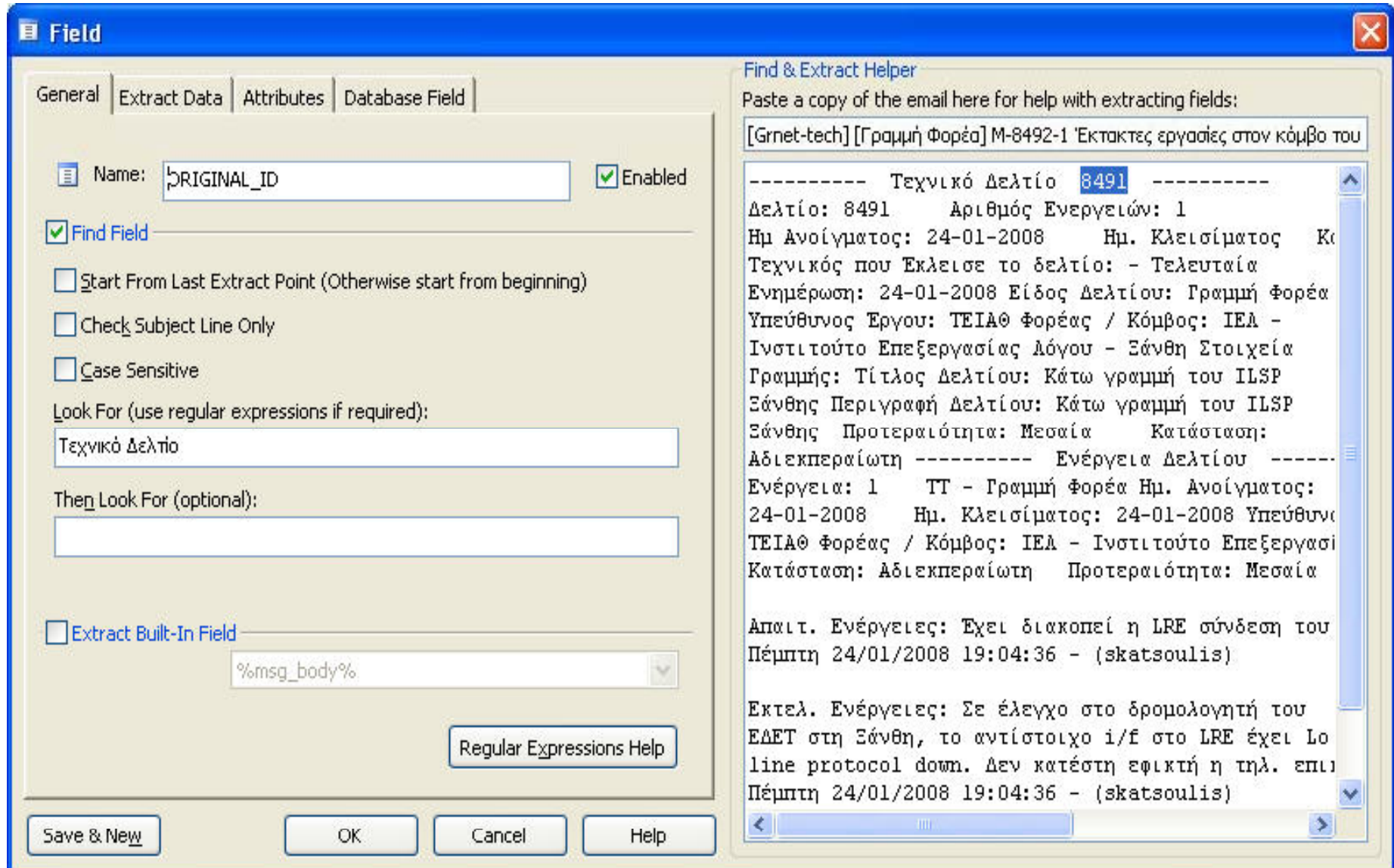
Add | Edit | Lookup | Delete | Move Up | Move Down

No	Name	Find	Db Table	DB Field	nable
1	ORIGINAL_ID	Όρίεεε Αρίεεε	TT	ORIGINAL_ID	<input checked="" type="checkbox"/>
2	CLOSE_ENGINEER	Όρίεεε εεε εεε εεε εεε	TT	Close_Engineer	<input checked="" type="checkbox"/>
3	TT_LASTUPDATE_TIME	Όρίεεε εεε	TT	TT_LASTUPDATE_	<input checked="" type="checkbox"/>
4	OPEN_ENGINEER	Έεεεεεε Όρίεεεεε	TT	OPEN_ENGINEER	<input checked="" type="checkbox"/>
5	TT_TYPE	Άεεεε Αρίεεεε	TT	TT_TYPE	<input checked="" type="checkbox"/>
6	TT_TITLE	*	TT	TT_TITLE	<input checked="" type="checkbox"/>
7	NETWORK_NODE	Όρίεεε / Έεεεε	TT	NETWORK_NODE	<input checked="" type="checkbox"/>
8	NETWORK_LINK_CIRCUIT	Όρίεεε	TT	NETWORK_LINK_	<input checked="" type="checkbox"/>
9	TT_TITLE	Όρίεεε Αρίεεεε	TT	TT_TITLE	<input checked="" type="checkbox"/>
10	TT_SHORT_DESCRIPTION	Έεεεεεε Αρίεεεεε	TT	TT_SHORT_DESCR	<input checked="" type="checkbox"/>
11	TT_PRIORITY	Έεεεεεεεεεεε	TT	TT_PRIORITY	<input checked="" type="checkbox"/>
12	TT_STATUS	Έεεεεεεεεε	TT	TT_STATUS	<input checked="" type="checkbox"/>
13	TT_OPEN_DATETIME	Έεε. Αρίεεεεεε	TT	TT_OPEN_DATETI	<input checked="" type="checkbox"/>
14	TT_CLOSE_DATETIME	Έεε. Έεεεεεεεεε	TT	TT_CLOSE_DATET	<input checked="" type="checkbox"/>
15	TT_LONG_DESCRIPTION	Άεεεε. Αρίεεεεεε	TT	TT_LONG_DESCRJ	<input checked="" type="checkbox"/>
16	ADDITIONAL_DATA	Άεεεε. Αρίεεεεεε	TT	ADDITIONAL_DAT	<input checked="" type="checkbox"/>
17	HISTORY	Έεεεεεε εεεε Όρίεεεεεεε	TT	HISTORY	<input checked="" type="checkbox"/>

OK Cancel Help







Field

General | Extract Data | Attributes | Database Field

Name: ORIGINAL_ID Enabled

Find Field

Start From Last Extract Point (Otherwise start from beginning)

Check Subject Line Only

Case Sensitive

Look For (use regular expressions if required):

Then Look For (optional):

Extract Built-In Field

Find & Extract Helper

Paste a copy of the email here for help with extracting fields:

[Gnet-tech] [Γραμμή Φορέα] M-8492-1 Έκτακτες εργασίες στον κόμβο του

```

----- Τεχνικό Δελτίο 8491 -----
Δελτίο: 8491      Αριθμός Ενεργειών: 1
Ημ Ανοίγματος: 24-01-2008      Ημ. Κλεισίματος: Κ
Τεχνικός που Έκλεισε το δελτίο: - Τελευταία
Ενημέρωση: 24-01-2008 Είδος Δελτίου: Γραμμή Φορέα
Υπεύθυνος Έργου: ΤΕΙΑΘ Φορέας / Κόμβος: ΙΕΑ -
Ινστιτούτο Επεξεργασίας Λόγου - Ξάνθη Στοιχεία
Γραμμής: Τίτλος Δελτίου: Κάτω γραμμή του ILSP
Ξάνθης Περιγραφή Δελτίου: Κάτω γραμμή του ILSP
Ξάνθης Προτεραιότητα: Μεσαία Κατάσταση:
Αδιεκπεραιώτη ----- Ενέργεια Δελτίου -----
Ενέργεια: 1      ΤΤ - Γραμμή Φορέα Ημ. Ανοίγματος:
24-01-2008      Ημ. Κλεισίματος: 24-01-2008 Υπεύθυνος
ΤΕΙΑΘ Φορέας / Κόμβος: ΙΕΑ - Ινστιτούτο Επεξεργασί
Κατάσταση: Αδιεκπεραιώτη Προτεραιότητα: Μεσαία

Απαιτ. Ενέργειες: Έχει διακοπεί η LRE σύνδεση του
Πέμπτη 24/01/2008 19:04:36 - (skatsoulis)

Εκτελ. Ενέργειες: Σε έλεγχο στο δρομολογητή του
ΕΔΕΤ στη Ξάνθη, το αντίστοιχο i/f στο LRE έχει Lo
line protocol down. Δεν κατέστη εφικτή η τηλ. επι
Πέμπτη 24/01/2008 19:04:36 - (skatsoulis)
    
```

View Checked Messages

View | Reprocess | Delete | Delete All | View Trigger Matches Only | View Failed Triggers Only

From: To: Search: Refresh

GRNET TT EGEE - Trigger Trouble Ticket

From	Subject	Received	Processed	Match	Success	Last Error
helpdesk@grnet.gr	[Gnet-tech] [Νέα Σύνδεση] M-9306-1 Μεταφορά τ...	22/9/2008 5:15:36 μμ	22/9/2008 6:27:24 μμ	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[Gnet-tech] SBInternet_GEANT=5D_TT-9320-1_...	22/9/2008 3:46:57 μμ	22/9/2008 4:42:12 μμ	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[LINE-STAT] [Γραμμή Φορέα] TT-9318-1 Κά τω η P...	22/9/2008 2:37:17 μμ	22/9/2008 3:27:04 μμ	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@uth.gr	[Fwd: D3=F5=ED=DD=E4=F1=E9=EF_=E3=E9=...	22/9/2008 1:59:30 μμ	22/9/2008 2:12:01 μμ	<input type="checkbox"/>	<input type="checkbox"/>	
akoletti@uth.gr	Συνέδριο για την εξάλειψη της σωματικής π...	22/9/2008 1:19:48 μμ	22/9/2008 1:42:37 μμ	<input type="checkbox"/>	<input type="checkbox"/>	
zeta@uth.gr	ΑΝΑΚΟΙΝΩΣΗ-ΚΑΛΕΣΜΑ	22/9/2008 12:54:35 μμ	22/9/2008 1:27:01 μμ	<input type="checkbox"/>	<input type="checkbox"/>	
helpdesk@grnet.gr	[Gnet-tech] [Νέα Σύνδεση] M-9306-1 Ενημ έρωση ...	22/9/2008 12:32:46 μμ	22/9/2008 1:27:12 μμ	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[Gnet-tech] [Δρομολογητές (Routers)] RT -9247-...	22/9/2008 10:58:11 ημ	22/9/2008 12:12:10...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@uth.gr	[Fwd: D0=D1=CF=D3=CA=CB=C7=D3=C7=-22=...	22/9/2008 9:52:52 ημ	22/9/2008 12:05:36...	<input type="checkbox"/>	<input type="checkbox"/>	
D.Matsakis@noc.ntua.gr	Re: [Gnet-tech] [Ξ"ΟΠΞΞΞΟΞΟΞ@ΞΠΞΩΟΠΞΟ...	21/9/2008 2:44:02 μμ	22/9/2008 12:05:33...	<input type="checkbox"/>	<input type="checkbox"/>	
D.Matsakis@noc.ntua.gr	Re: [Gnet-tech] [Ξ"ΟΠΞΞΞΟΞΟΞ@ΞΠΞΩΟΠΞΟ...	21/9/2008 2:41:41 μμ	22/9/2008 12:05:35...	<input type="checkbox"/>	<input type="checkbox"/>	
helpdesk@grnet.gr	[Gnet-tech] [Γραμμή Κορμού] TT-9315-1 Ε πανήλ...	21/9/2008 12:02:11 μμ	22/9/2008 12:05:32...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[LINE-STAT] [Γραμμή Φορέα] TT-9314-1 Σχ επικά μ...	21/9/2008 11:29:03 ημ	22/9/2008 12:05:24...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[Gnet-tech] SBInternet_GEANT=5D_M-9298-1_...	21/9/2008 11:24:12 ημ	22/9/2008 12:05:26...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[LINE-STAT] [Γραμμή Φορέα] TT-9314-1 Συ νεχιζετ...	21/9/2008 11:16:08 ημ	22/9/2008 12:05:22...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[Gnet-tech] [Γραμμή Κορμού] TT-9315-1 Κ άτω η ...	21/9/2008 9:50:54 ημ	22/9/2008 12:05:29...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[LINE-STAT] [Γραμμή Φορέα] TT-9314-1 Ασ τάθεια ...	20/9/2008 5:01:12 μμ	22/9/2008 12:05:19...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[Gnet-tech] [Γραμμή Κορμού] TT-9312-1 Σ ταθερή...	20/9/2008 4:33:21 μμ	22/9/2008 12:05:21...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
helpdesk@grnet.gr	[LINE-STAT] [Γραμμή Φορέα] TT-9313-1 Στ αθερή ...	20/9/2008 4:32:36 μμ	22/9/2008 12:05:14...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

2069 Messages

SQL Manager 2007 Lite for MySQL - CommonTTs on ccenoc.in2p3.fr [CommonTTs]

Database View Tools Options Windows Help

Create

Databases

- localhost
 - mysqld on localhost
 - voipchat on localhost
 - voipchat on localhost(1)
- ccenoc.in2p3.fr
 - CommonTTs on ccenoc.in2p3.fr
 - Tables (3)
 - GRNET
 - TT
 - TTstd
 - Views
 - Procedures
 - Functions
 - UDFs
 - Favorite Queries
 - Projects

Table - [TT] - [CommonTTs on ccenoc.in2p3.fr]

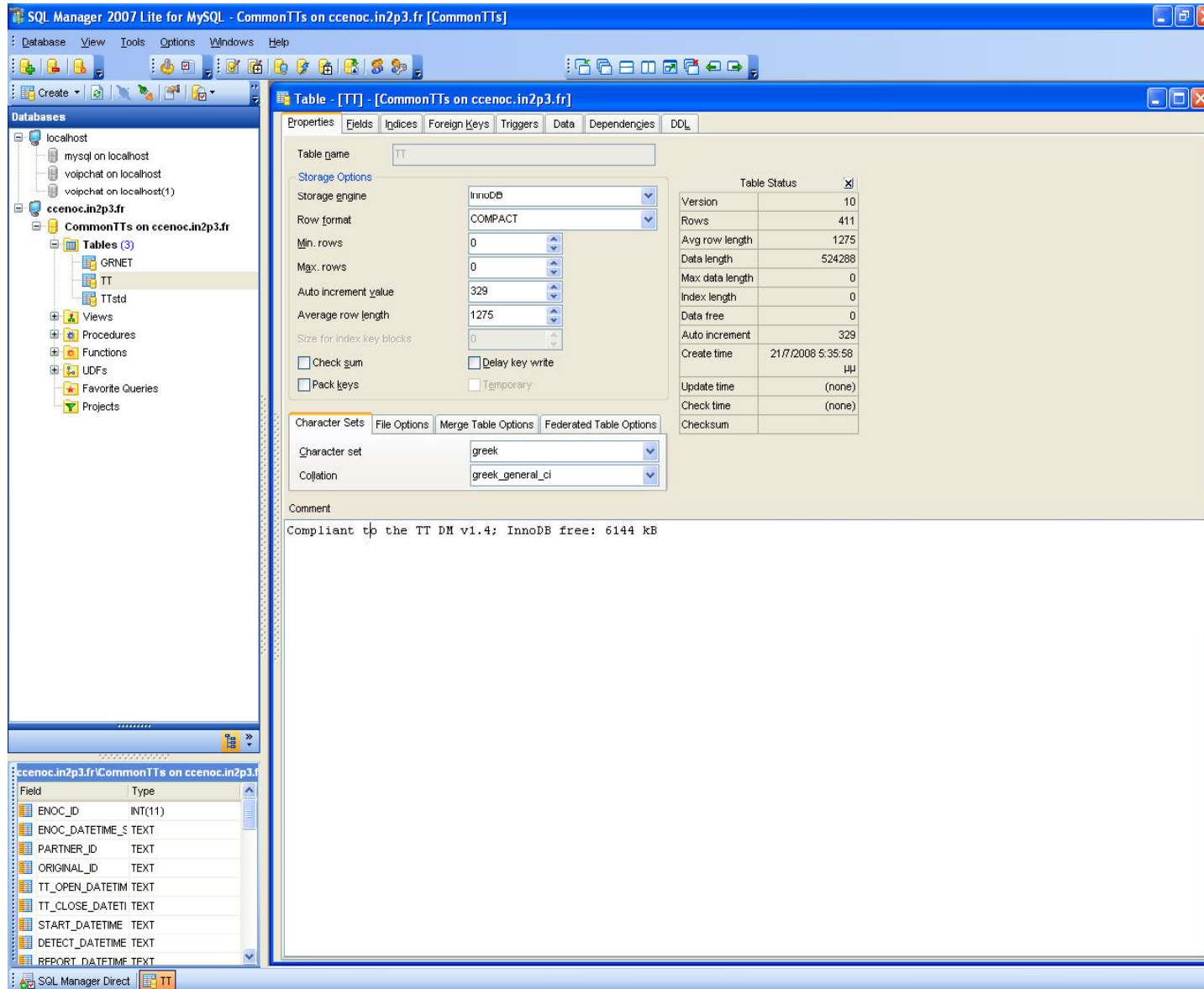
Properties Fields Indices Foreign Keys Triggers Data Dependencies DDL

Field Name	Field Type	Size	Precision	Not Null	Default	Comment
ENOC_ID	INTEGER	11	0	<input checked="" type="checkbox"/>	Null	
ENOC_DATETIME_STORED	TEXT	0	0	<input type="checkbox"/>	Null	
PARTNER_ID	TEXT	0	0	<input type="checkbox"/>	Null	
ORIGINAL_ID	TEXT	0	0	<input type="checkbox"/>	Null	
TT_OPEN_DATETIME	TEXT	0	0	<input type="checkbox"/>	Null	
TT_CLOSE_DATETIME	TEXT	0	0	<input type="checkbox"/>	Null	
START_DATETIME	TEXT	0	0	<input type="checkbox"/>	Null	
DETECT_DATETIME	TEXT	0	0	<input type="checkbox"/>	Null	
REPORT_DATETIME	TEXT	0	0	<input type="checkbox"/>	Null	
END_DATETIME	TEXT	0	0	<input type="checkbox"/>	Null	
TT_LASTUPDATE_TIME	TEXT	0	0	<input type="checkbox"/>	Null	
TIME_WINDOW_START	TEXT	0	0	<input type="checkbox"/>	Null	
TIME_WINDOW_END	TEXT	0	0	<input type="checkbox"/>	Null	
WORK_PLAN_START_DATETIME	TEXT	0	0	<input type="checkbox"/>	Null	
WORK_PLAN_END_DATETIME	TEXT	0	0	<input type="checkbox"/>	Null	
TT_TITLE	TEXT	0	0	<input type="checkbox"/>	Null	
TT_SHORT_DESCRIPTION	TEXT	0	0	<input type="checkbox"/>	Null	
TT_LONG_DESCRIPTION	TEXT	0	0	<input type="checkbox"/>	Null	
TYPE	TEXT	0	0	<input type="checkbox"/>	Null	
TT_TYPE	TEXT	0	0	<input type="checkbox"/>	Null	
TT_IMPACT_ASSESSMENT	TEXT	0	0	<input type="checkbox"/>	Null	
RELATED_EXTERNAL_TICKETS	TEXT	0	0	<input type="checkbox"/>	Null	
LOCATION	TEXT	0	0	<input type="checkbox"/>	Null	
NETWORK_NODE	TEXT	0	0	<input type="checkbox"/>	Null	
NETWORK_LINK_CIRCUIT	TEXT	0	0	<input type="checkbox"/>	Null	
END_LINE_LOCATION_A	TEXT	0	0	<input type="checkbox"/>	Null	
END_LINE_LOCATION_B	TEXT	0	0	<input type="checkbox"/>	Null	
OPEN_ENGINEER	TEXT	0	0	<input type="checkbox"/>	Null	
CONTACT_ENGINEER	TEXT	0	0	<input type="checkbox"/>	Null	
CLOSE_ENGINEER	TEXT	0	0	<input type="checkbox"/>	Null	
TT_PRIORITY	TEXT	0	0	<input type="checkbox"/>	Null	
TT_STATUS	TEXT	0	0	<input type="checkbox"/>	Null	
ADDITIONAL_DATA	TEXT	0	0	<input type="checkbox"/>	Null	
RELATED_ACTIVITY	TEXT	0	0	<input type="checkbox"/>	Null	
HISTORY	TEXT	0	0	<input type="checkbox"/>	Null	
HASH	TEXT	0	0	<input type="checkbox"/>	Null	
TT_SOURCE	TEXT	0	0	<input type="checkbox"/>	Null	
AFFECTED_COMMUNITY	TEXT	0	0	<input type="checkbox"/>	Null	
AFFECTED_SERVICE	TEXT	0	0	<input type="checkbox"/>	Null	

ccenoc.in2p3.fr/CommonTTs on ccenoc.in2p3.fr

Field	Type
ENOC_ID	INT(11)
ENOC_DATETIME_S	TEXT
PARTNER_ID	TEXT
ORIGINAL_ID	TEXT
TT_OPEN_DATETIME	TEXT
TT_CLOSE_DATETIME	TEXT
START_DATETIME	TEXT
DETECT_DATETIME	TEXT
REPORT_DATETIME	TEXT

SQL Manager Direct TT



The screenshot displays the SQL Manager 2007 Lite interface for MySQL. The main window shows the properties of the 'TT' table within the 'CommonTTs' database on the 'ccenoc.in2p3.fr' server. The 'Storage Options' tab is active, showing the following configuration:

- Table name: TT
- Storage engine: InnoDB
- Row format: COMPACT
- Min. rows: 0
- Max. rows: 0
- Auto increment value: 329
- Average row length: 1275
- Size for index key blocks: 0
- Options: Check sum, Pack keys, Delay key write, Temporary
- Character set: greek
- Collation: greek_general_ci

The 'Table Status' tab provides the following statistics:

Table Status	Value
Version	10
Rows	411
Avg row length	1275
Data length	524288
Max data length	0
Index length	0
Data free	0
Auto increment	329
Create time	21/7/2008 5:35:58
Update time	(none)
Check time	(none)
Checksum	

The 'Comment' field contains the text: "Compliant to the TT DM v1.4; InnoDB free: 6144 kB".

The 'Databases' tree on the left shows the following structure:

- localhost
 - mysql on localhost
 - voipchat on localhost
 - voipchat on localhost(1)
- ccenoc.in2p3.fr
 - CommonTTs on ccenoc.in2p3.fr
 - Tables (3)
 - GRNET
 - TT
 - TTstd
 - Views
 - Procedures
 - Functions
 - UDFs
 - Favorite Queries
 - Projects

The 'Fields' tab at the bottom shows the following table structure:

Field	Type
ENOC_ID	INT(11)
ENOC_DATETIME_S	TEXT
PARTNER_ID	TEXT
ORIGINAL_ID	TEXT
TT_OPEN_DATETIM	TEXT
TT_CLOSE_DATETI	TEXT
START_DATETIME	TEXT
DETECT_DATETIME	TEXT
REPORT_DATETIME	TEXT

SQL Manager 2007 Lite for MySQL - CommonTTs on ccenoc.in2p3.fr [CommonTTs]

Database View Tools Options Windows Help

Table - [TT] - [CommonTTs on ccenoc.in2p3.fr]

Properties Fields Indices Foreign Keys Triggers Data Dependencies DDL

Find: 1000

EHOC_ID	ENOC_DATETIME	PA	ORIGINAL_ID	TT_OPEN_DATE	TT_CLOSE_DATE	START_DATETIME	DETECT_DATE	REPORT_DATE	END_DATETIME	TT_LASTUPC
3	Null	Null	9141	21-07-2008	21-07-2008	Null	Null	Null	Null	
4	Null	Null	9096	08-07-2008	08-07-2008	Null	Null	Null	Null	
5	Null	Null	9124	21-07-2008	21-07-2008	Null	Null	Null	Null	
6	Null	Null	9124	16-07-2008	16-07-2008	Null	Null	Null	Null	
7	Null	Null	9124	21-07-2008	21-07-2008	Null	Null	Null	Null	
8	Null	Null	8491	24-01-2008	24-01-2008	Null	Null	Null	Null	24-01-2008
9	Null	Null	9096	08-07-2008	08-07-2008	Null	Null	Null	Null	
10	Null	Null	8901	20-05-2008	20-05-2008	Null	Null	Null	Null	
11	Null	Null	8468	18-01-2008	18-01-2008	Null	Null	Null	Null	
12	Null	Null	9139	20-07-2008	20-07-2008	Null	Null	Null	Null	
13	Null	Null	9145	22-07-2008	22-07-2008	Null	Null	Null	Null	
14	Null	Null	9148	22-07-2008	22-07-2008	Null	Null	Null	Null	
15	Null	Null	9135	22-07-2008	22-07-2008	Null	Null	Null	Null	
16	Null	Null	9140	22-07-2008	22-07-2008	Null	Null	Null	Null	
17	Null	Null	9149	23-07-2008	23-07-2008	Null	Null	Null	Null	
18	Null	Null	8901	20-05-2008	20-05-2008	Null	Null	Null	Null	
19	Null	Null	9149	23-07-2008	23-07-2008	Null	Null	Null	Null	
20	Null	Null	9075	02-07-2008	02-07-2008	Null	Null	Null	Null	
21	Null	Null	9151	23-07-2008	23-07-2008	Null	Null	Null	Null	
22	Null	Null	9151	23-07-2008	23-07-2008	Null	Null	Null	Null	
23	Null	Null	9075	02-07-2008	02-07-2008	Null	Null	Null	Null	
24	Null	Null	9145	22-07-2008	22-07-2008	Null	Null	Null	Null	
25	Null	Null	9152	24-07-2008	24-07-2008	Null	Null	Null	Null	
26	Null	Null	9118	15-07-2008	15-07-2008	Null	Null	Null	Null	
27	Null	Null	9149	23-07-2008	23-07-2008	Null	Null	Null	Null	
28	Null	Null	9153	24-07-2008	24-07-2008	Null	Null	Null	Null	
29	Null	Null	9153	24-07-2008	24-07-2008	Null	Null	Null	Null	
30	Null	Null	9151	23-07-2008	23-07-2008	Null	Null	Null	Null	
31	Null	Null	9151	23-07-2008	23-07-2008	Null	Null	Null	Null	
32	Null	Null	9141	21-07-2008	21-07-2008	Null	Null	Null	Null	
33	Null	Null	9152	24-07-2008	24-07-2008	Null	Null	Null	Null	
34	Null	Null	9153	24-07-2008	24-07-2008	Null	Null	Null	Null	
35	Null	Null	9156	25-07-2008	25-07-2008	Null	Null	Null	Null	
36	Null	Null	9124	16-07-2008	16-07-2008	Null	Null	Null	Null	

Grid View Form View

Records fetched: 326/326

LIMIT 0, 1000

Field Type

- EHOC_ID INT(11)
- ENOC_DATETIME TEXT
- PARTNER_ID TEXT
- ORIGINAL_ID TEXT
- TT_OPEN_DATETIME TEXT
- TT_CLOSE_DATETIME TEXT
- START_DATETIME TEXT
- DETECT_DATETIME TEXT
- REPORT_DATETIME TEXT

- ***"Grid Management: Data Model Definition for Trouble Ticket Normalization"***, D. Zisiadis, S. Kopsidas, S. Tsavli, C. Tziouvaras, F. Karayannis, L. Tassiulas and L. Georgiadis.

Accepted in the ICST/ACM Second International Conference on Networks for Grid Applications Conference (GRIDNETS), Beijing – China, October 2008

- **Pre-defined values translation**
- **National language to English translation using an automated translation software (e.g. SysTran) for the free-text fields**
- **TT retrieval via direct database connections**
- **Enhanced security implementation (encryption over the connections)**
- **Expansion to other NRENs**
- **Integration of the common TTs service into the ENOC**

Questions ?

THANK YOU !