RT and RT for Incident Response

Jesse Vincent, Best Practical Solutions

http://fsck.com/~jesse/talks/2008/09/rtir.pdf

Carlos Fuentes Bermejo

RTIR WG - Primary Technical Contact

RedIRIS IRIS-CERT - Security Specialist

Si habla español

Couldn’t be here today :(

http://fsck.com/~jesse/talks/2008/09/rtir.pdf

Jesse Vincent

Designed RT and RTIR

(It's all my fault)

Founded Best Practical

(It's even more my fault)

No puedo presentar en español. Lo Siento.

http://fsck.com/~jesse/talks/2008/09/rtir.pdf

WARNING

AVISO

I represent a software vendor

We sell support, training, consulting and customization for RT, RTIR and RTFM

This talk could be dangerously close to a sales pitch

I’m not a sales guy

All the software we make is open source

We created RT to help sysadmins and helpdesk staff

We helped create RTIR to let CERT teams be more effective

I want you to use RTIR (or RT) for free - *forever*

I will be *happy* if you use them for free

(Now do you believe that I'm not a sales guy?)

About RT

RT is a Ticketing System

RT helps keep you organized

Every conversation gets a number, a status and an owner

RT helps keep your customers happy

RT sends an autoreply and ticket number when they report a problem

RT helps keep your team from going crazy

You know what's been done – and when

RT helps you show your bosses how hard you work

It's easy to run reports on all kinds of metrics

RT builds an ad-hoc knowledge base

(RTFM helps you build an explicit Knowledge Base)

Some RT history...

Created in 1996

First public release in 1997

2.0 released in 1999

Best Practical formed in 2001

RTIR Created in 2003

RTIR WG Started in 2005

RTIR 2.4 Released 2008 *(Last week!)*

What is RT used for?

Issue Tracking

Trouble Ticketing

Incident Handling

Workflow

Helpdesk

Customer Service

Process Management

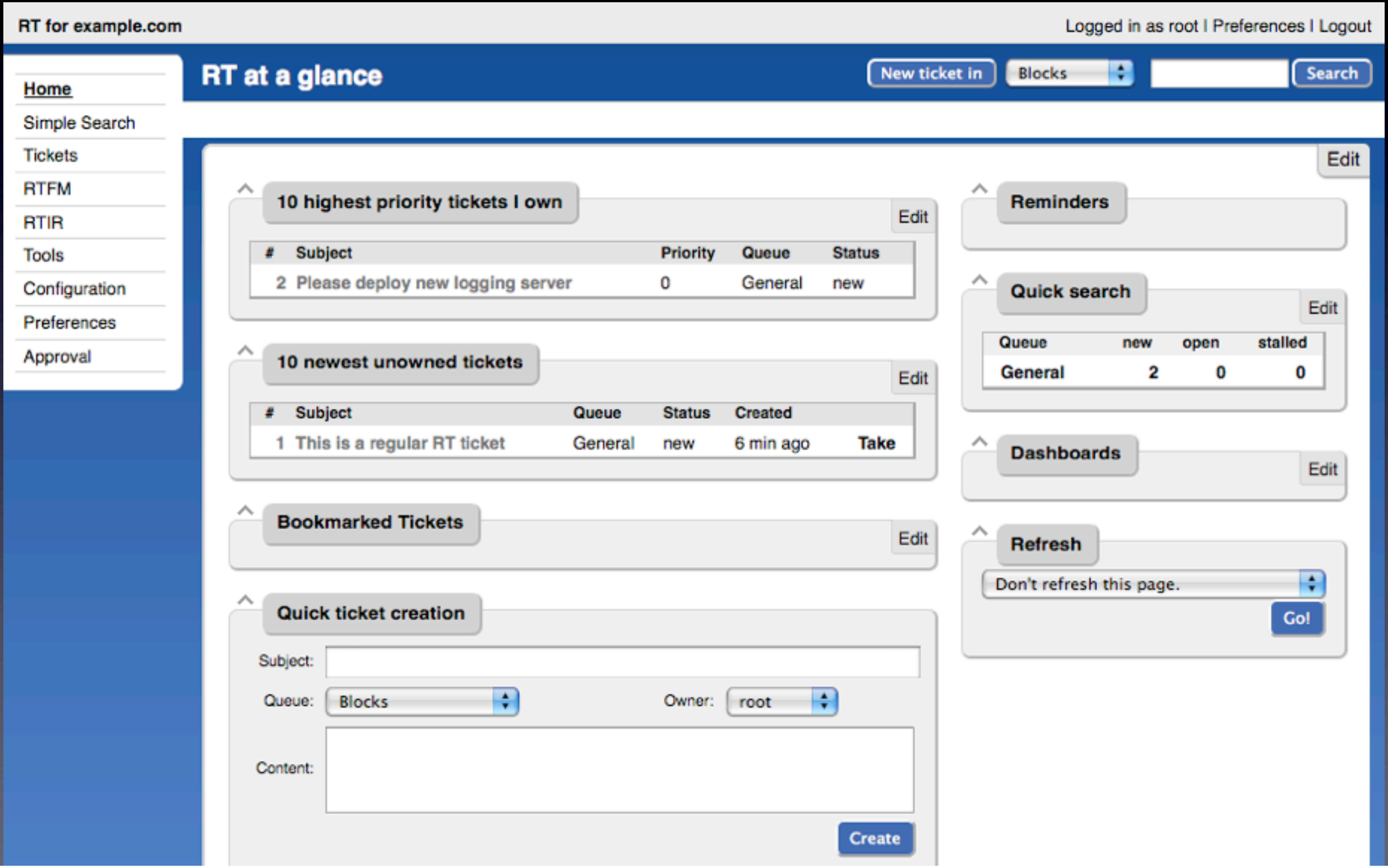
Bug Tracking

Sales Leads

Youth Counseling

Home Rentals

RT Homepage



RT for example.com

Logged in as root | Preferences | Logout

RT at a glance

10 highest priority tickets I own

#	Subject	Priority	Queue	Status
2	Please deploy new logging server	0	General	new

10 newest unowned tickets

#	Subject	Queue	Status	Created	
1	This is a regular RT ticket	General	new	6 min ago	Take

Bookmarked Tickets

Quick ticket creation

Subject:

Queue: Blocks

Owner: root

Content:

Reminders

Quick search

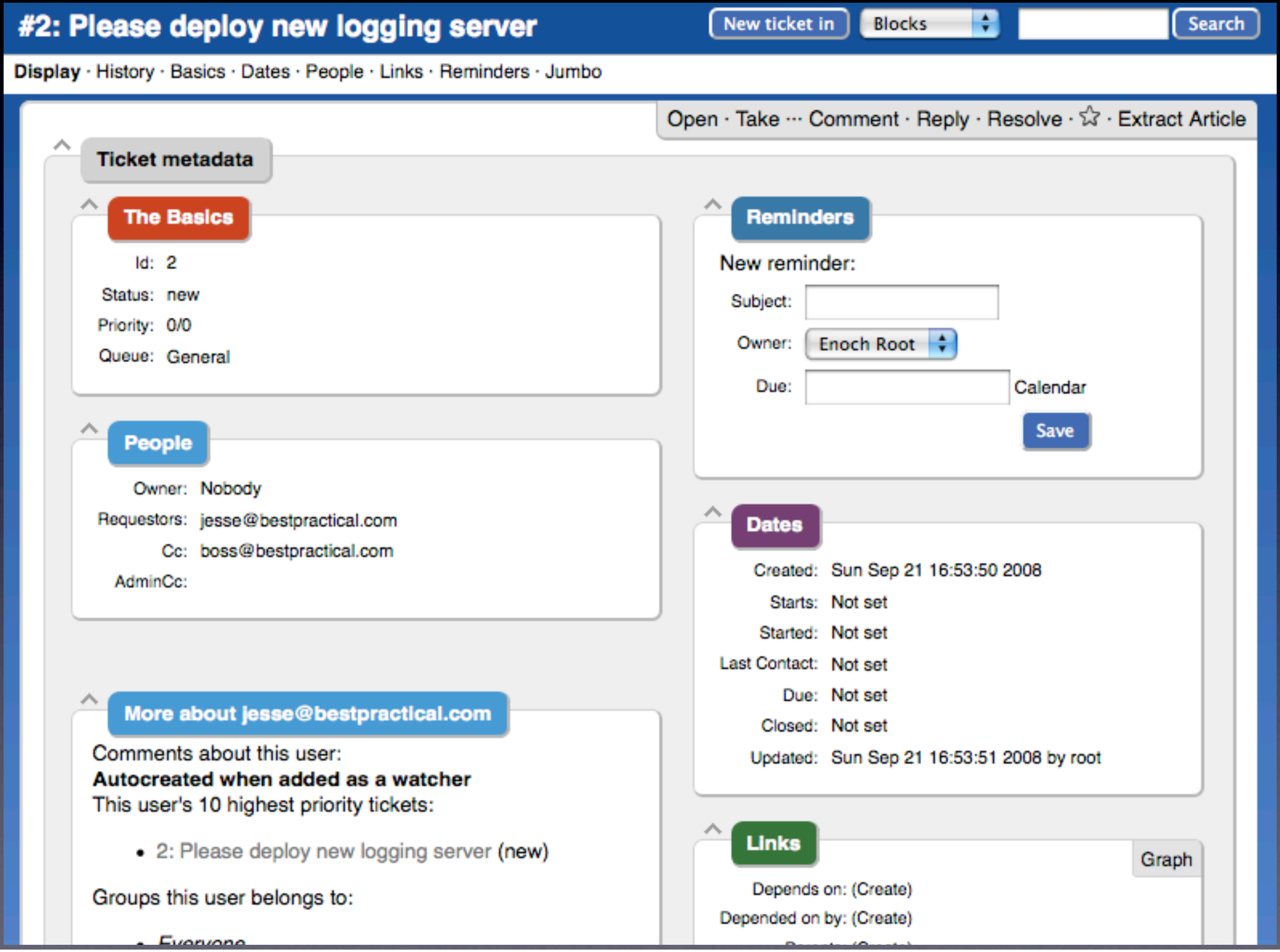
Queue	new	open	stalled
General	2	0	0

Dashboards

Refresh

Don't refresh this page.

Ticket Details



#2: Please deploy new logging server

New ticket in
Blocks
Search
Display · History · Basics · Dates · People · Links · Reminders · Jumbo
Open · Take ··· Comment · Reply · Resolve · ☆ · Extract Article
Ticket metadata

The Basics

Id: 2
Status: new
Priority: 0/0
Queue: General

People

Owner: Nobody
Requestors: jesse@bestpractical.com
Cc: boss@bestpractical.com
AdminCc:

More about jesse@bestpractical.com

Comments about this user:
Autocreated when added as a watcher
This user's 10 highest priority tickets:

- 2: Please deploy new logging server (new)

Groups this user belongs to:

- Everyone

Reminders

New reminder:
Subject:
Owner: Enoch Root
Due: Calendar

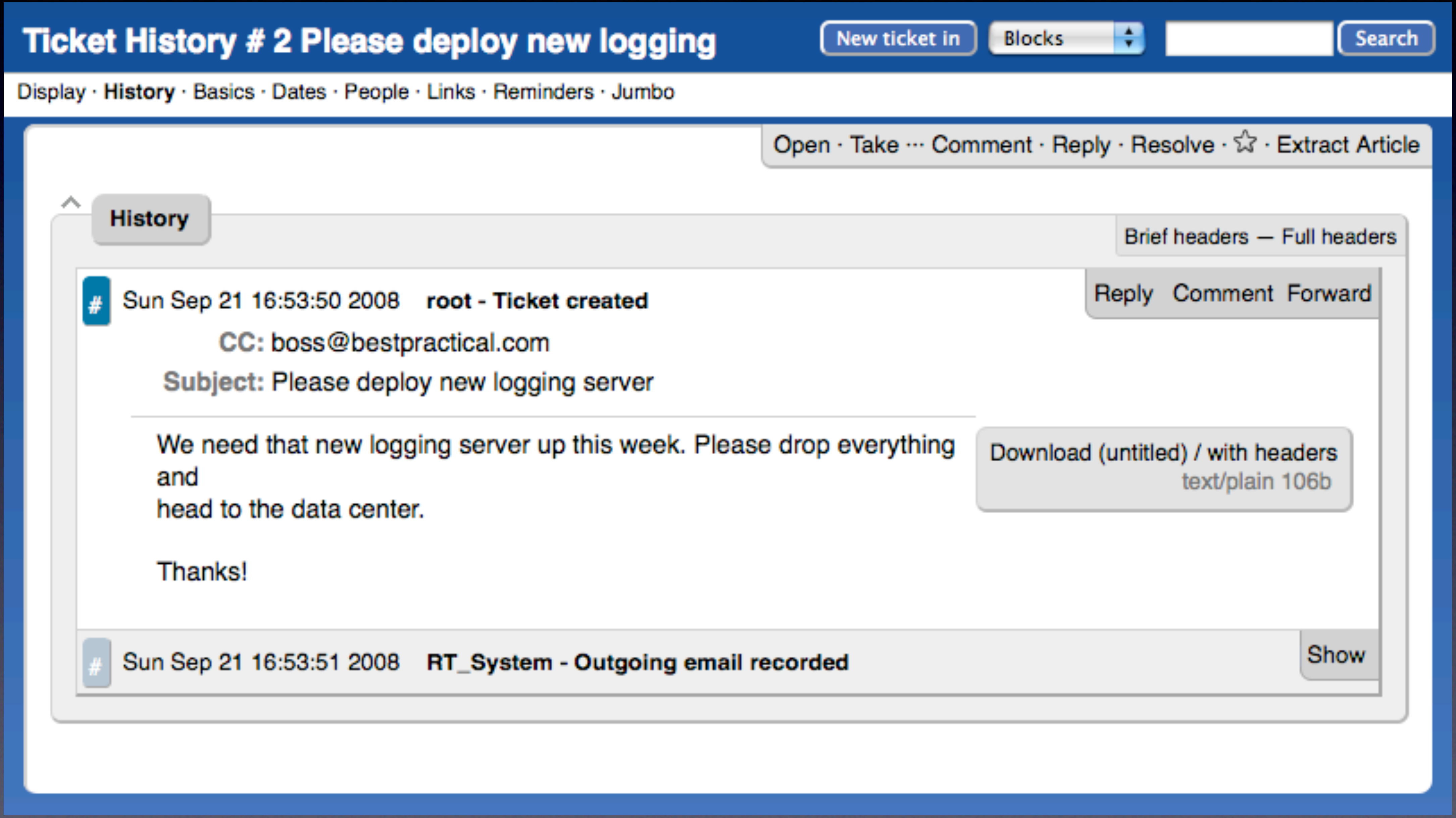
Dates

Created: Sun Sep 21 16:53:50 2008
Starts: Not set
Started: Not set
Last Contact: Not set
Due: Not set
Closed: Not set
Updated: Sun Sep 21 16:53:51 2008 by root

Links

Depends on: (Create)
Depended on by: (Create)

Ticket History



Ticket History # 2 Please deploy new logging
New ticket in
Blocks
Search
Display · History · Basics · Dates · People · Links · Reminders · Jumbo
Open · Take ··· Comment · Reply · Resolve · ☆ · Extract Article
History
Brief headers — Full headers
Reply Comment Forward
Download (untitled) / with headers
text/plain 106b
Show

Sun Sep 21 16:53:50 2008 **root - Ticket created**

CC: boss@bestpractical.com

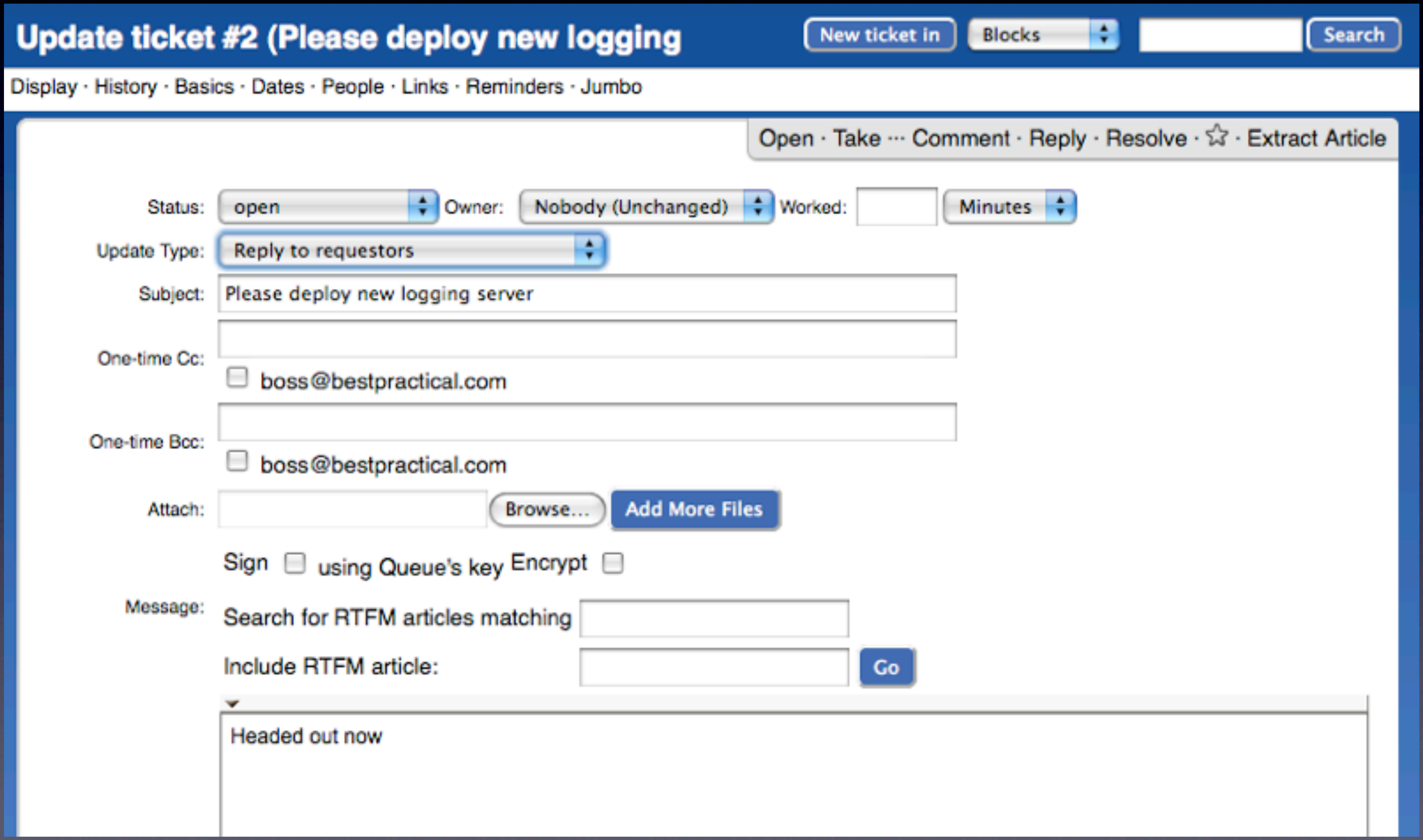
Subject: Please deploy new logging server

We need that new logging server up this week. Please drop everything and
head to the data center.

Thanks!

Sun Sep 21 16:53:51 2008 **RT_System - Outgoing email recorded**

Ticket Update



New ticket in
Blocks
Search
Display · History · Basics · Dates · People · Links · Reminders · Jumbo
Open · Take ··· Comment · Reply · Resolve · ☆ · Extract Article
Browse...
Add More Files
Go

Update ticket #2 (Please deploy new logging

Status: open

Owner: Nobody (Unchanged)

Worked: Minutes

Update Type: Reply to requestors

Subject: Please deploy new logging server

One-time Cc: □ boss@bestpractical.com

One-time Bcc: □ boss@bestpractical.com

Attach:

Sign □ using Queue's key Encrypt □

Message: Search for RTFM articles matching

Include RTFM article:

Headed out now

RT Core Concepts

Tickets

Queues

Custom Fields

Scrips

Access Control

Email Gateway

Internationalization

Tickets

Track issues

Have unique id #s

Keep a history of correspondence

Have one owner

(And a bunch of other metadata)

Queues

High-level grouping of tickets

Each can have its own

- Access Control
- Business Logic (Scrips)
- Custom Fields

Custom Fields

Track your own ticket metadata

- Freeform (optional validation)
- Select (one or many)
- Text block
- Upload files or images
- Custom data sources
- Per-field access control

Scrips

Custom business logic

- (Also how RT sends mail)

Each is built from

- Condition
- Action
- Template

Access Control

User, Group or Role based

Global and Per-queue rights

Email Gateway

RT was first made to replace a mailing list

RT is designed for email interaction

(and web. and command line)

RT mediates and tracks all discussions

Internationalization

Fully native UTF8 internally

Speaks 22 languages

Handles inbound and outbound email encoding

Contribute at

https://translations.launchpad.net/rt/

More RT Features

- Charts and Reports
- Dashboards
- Self-service interface
- Feeds
- RTFM
- PGP Support
- Themability
- Ticket Aging

- Ticket Locking
- Web API
- Perl API
- CLI tools
- Customizability

The RT Community

The RT Community

http://bestpractical.com/rt

http://wiki.bestpractical.com

rt-es-subscribe@lists.bestpractical.com

rt-users-subscribe@lists.bestpractical.com
rt-devel-subscribe@lists.bestpractical.com

Quick Start *(For Testing)*

```
wget http://download.bestpractical.com/
  pub/rt/release/rt.tar.gz

tar xzvf rt.tar.gz

cd rt-3.8.1

make fixdeps

./bin/standalone_httpd
```

RTIR: RT For Incident Response

What is RTIR?

Ticketing System

RT for Incident Response

Designed for CERT/CSIRT Teams

Designed for *a* CERT team - JANET-CERT

Generalized for a ‘standard’ process

Differences from RT

RTIR *is* RT

...with more features, a custom interface and special configuration

Designed for CERT/CSIRT Teams

Metadata - IPs, SLAs, Constituency, etc

Workflows - Streamline your job

Views - Show what you need

Plugins - Lookups, Locking, 'Shredding', etc

We designed RTIR to help you get your job done.

BEST PRACTICAL™

RTIR keeps track of incidents.

RTIR keeps track of correspondence.

RTIR keeps an uneditable history.

RTIR makes incident research easier.

RTIR tracks your SLA commitments.

RTIR integrates with your other systems.

RTIR takes care of the ‘boring’ parts of Incident Response.

RTIR Basics

Incident Reports

Incidents

Investigations

Blocks

RTIR History

RTIR 1.0

Sponsored by JANET-CERT

Replaced a homebuilt Remedy system

Built on RT 3.0

2003

RTIR 1.0 Features

Clickable ‘Data Detectors’

IP/Domain/Address Lookup Tool

RTIR Automated Rules

SLA Monitoring

Business-Hours Logic

RTIR WG Members

JANET CSIRT/UKERNA
(Chair of project)

IRIS-CERT/RedIRIS
(Technical contact)

CERT POLSKA

CERT.PT

GOVCERT.NL

ACOnet-CERT

LITNET CERT

SUNet CERT

SWITCH-CERT

RTIR 2

Sponsored by TERENA RTIR WG

Initial vision by JANET-CERT

Design collaboration between RTIR WG and Best Practical

Built on RT 3.8

RTIR 2.4 released September 2008

RTIR 2.4 New Features

PGP Integration

Ticket Locking

Ticket Aging

Database Pruning

RTFM Integration

IP Address Range Fields

Message Forwarding

Bulk Actions

Quick Actions

Per-User Timezones

RTIR 2.4 New Features

Improved Automation

Improved Searching

Improved Customization

Improved Reporting

Improved Testing

Improved Performance

Improved UI

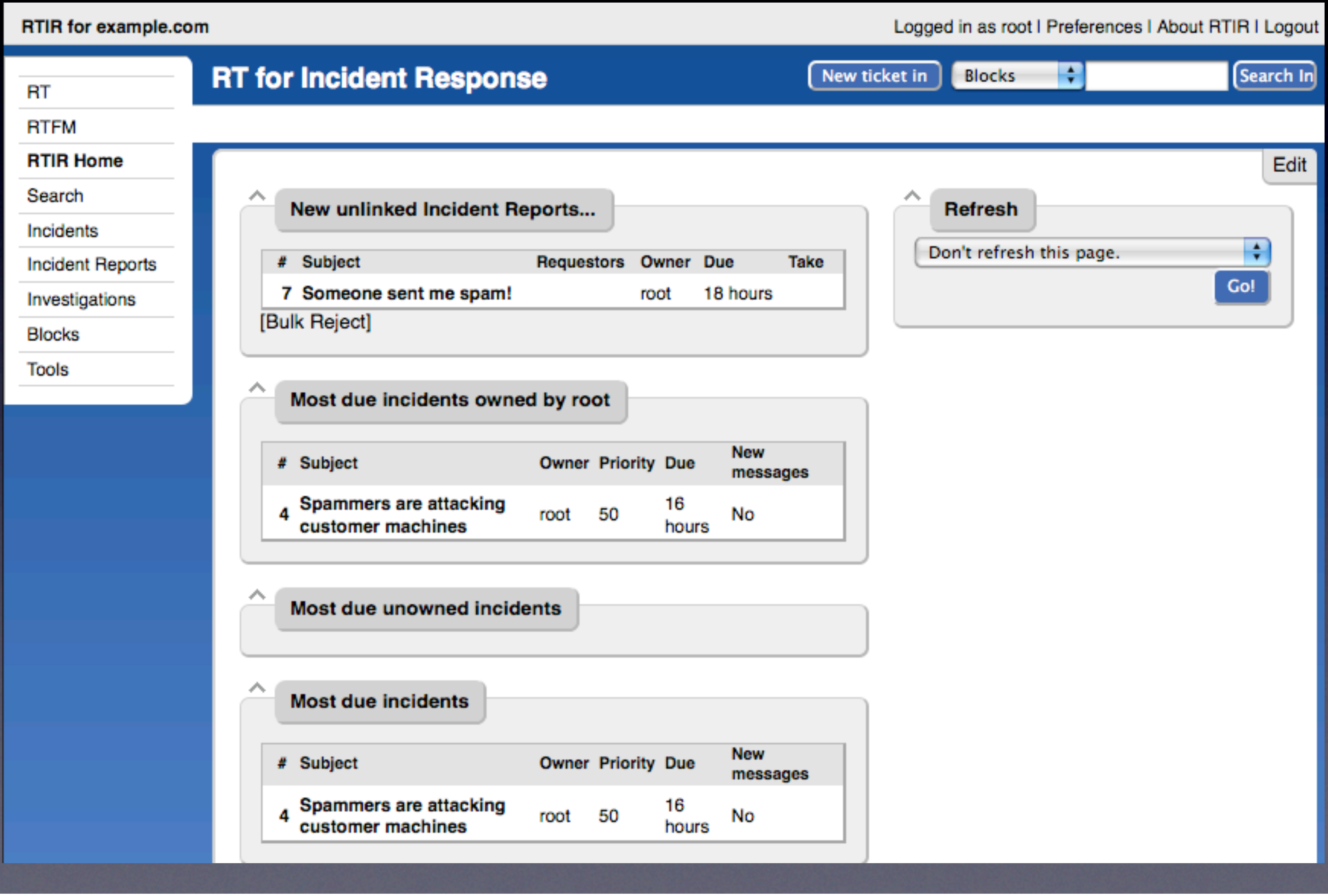
More flexible workflow

More user preferences

Easier Integration

The RTIR Workflow

RTIR Homepage



RTIR for example.com

Logged in as root | Preferences | About RTIR | Logout

RT for Incident Response

New unlinked Incident Reports...

#	Subject	Requestors	Owner	Due	Take
7	Someone sent me spam!		root	18 hours	

[Bulk Reject]

Refresh

Don't refresh this page.

Most due incidents owned by root

#	Subject	Owner	Priority	Due	New messages
4	Spammers are attacking customer machines	root	50	16 hours	No

Most due unowned incidents

Most due incidents

#	Subject	Owner	Priority	Due	New messages
4	Spammers are attacking customer machines	root	50	16 hours	No

RTIR is built around *Incidents*

Incidents tie everything together

One Incident for

- many Incident Reports
- many Investigations
- many Blocks

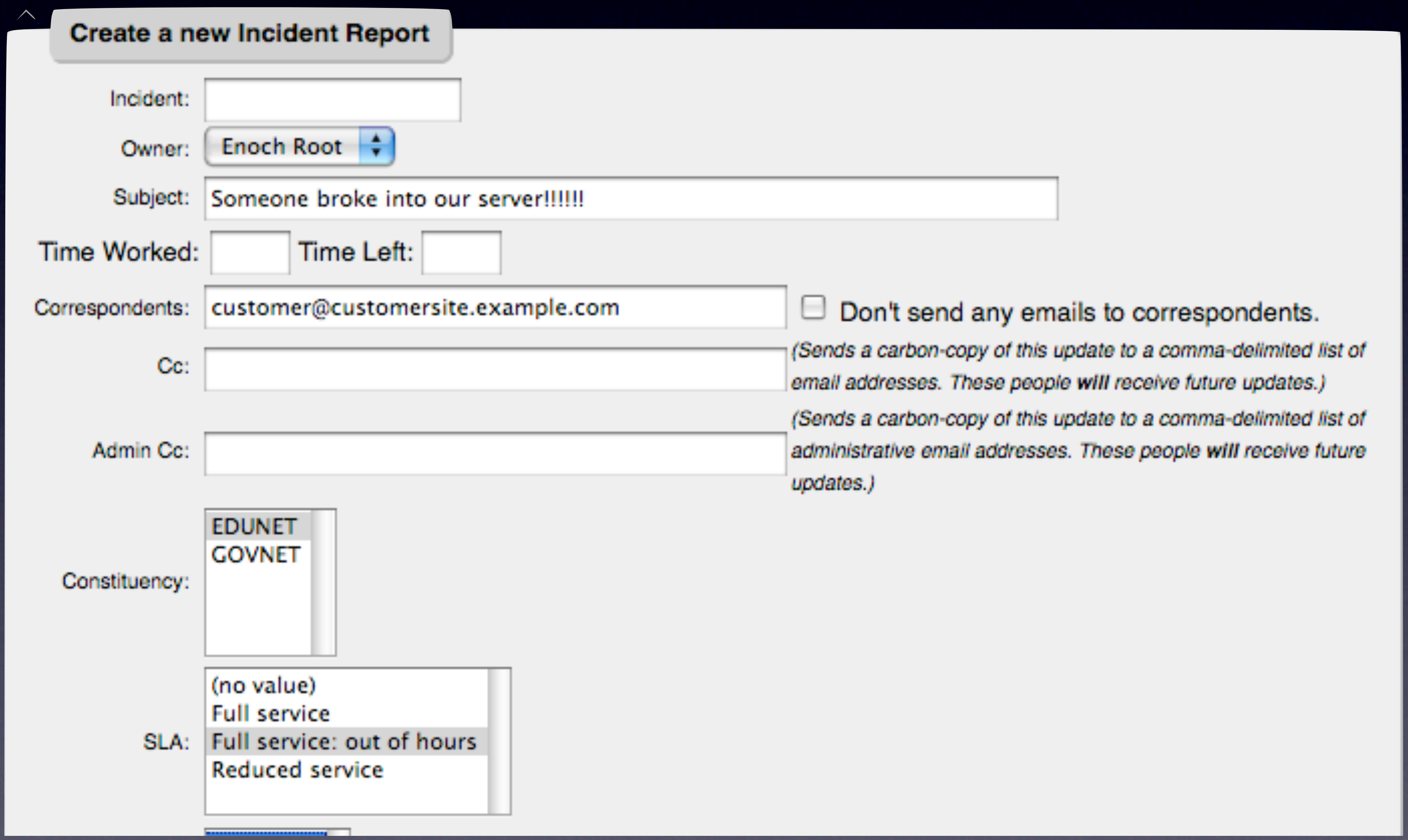
It usually starts with an *Incident Report*

Conversations with Customers

“Something bad happened!”

“Please help me!”

Create an IR



Create a new Incident Report

Incident:

Owner: Enoch Root

Subject: Someone broke into our server!!!!!!

Time Worked: Time Left:

Correspondents: customer@customersite.example.com

□ Don't send any emails to correspondents.

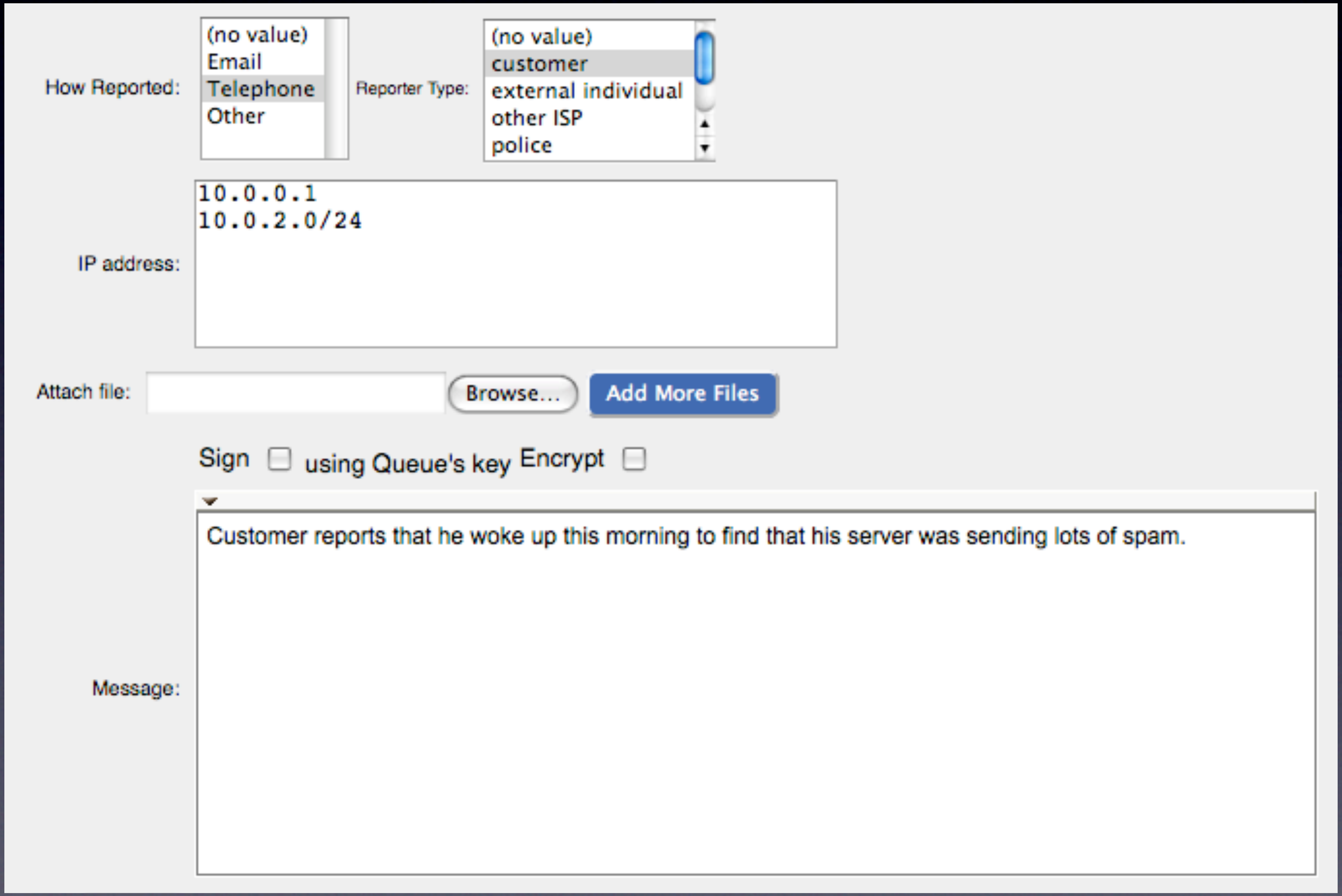
Cc: *(Sends a carbon-copy of this update to a comma-delimited list of email addresses. These people **will** receive future updates.)*

Admin Cc: *(Sends a carbon-copy of this update to a comma-delimited list of administrative email addresses. These people **will** receive future updates.)*

Constituency: EDUNET, GOVNET

SLA: (no value), Full service, Full service: out of hours, Reduced service

Create an IR #2



How Reported: (no value) / Email / **Telephone** / Other

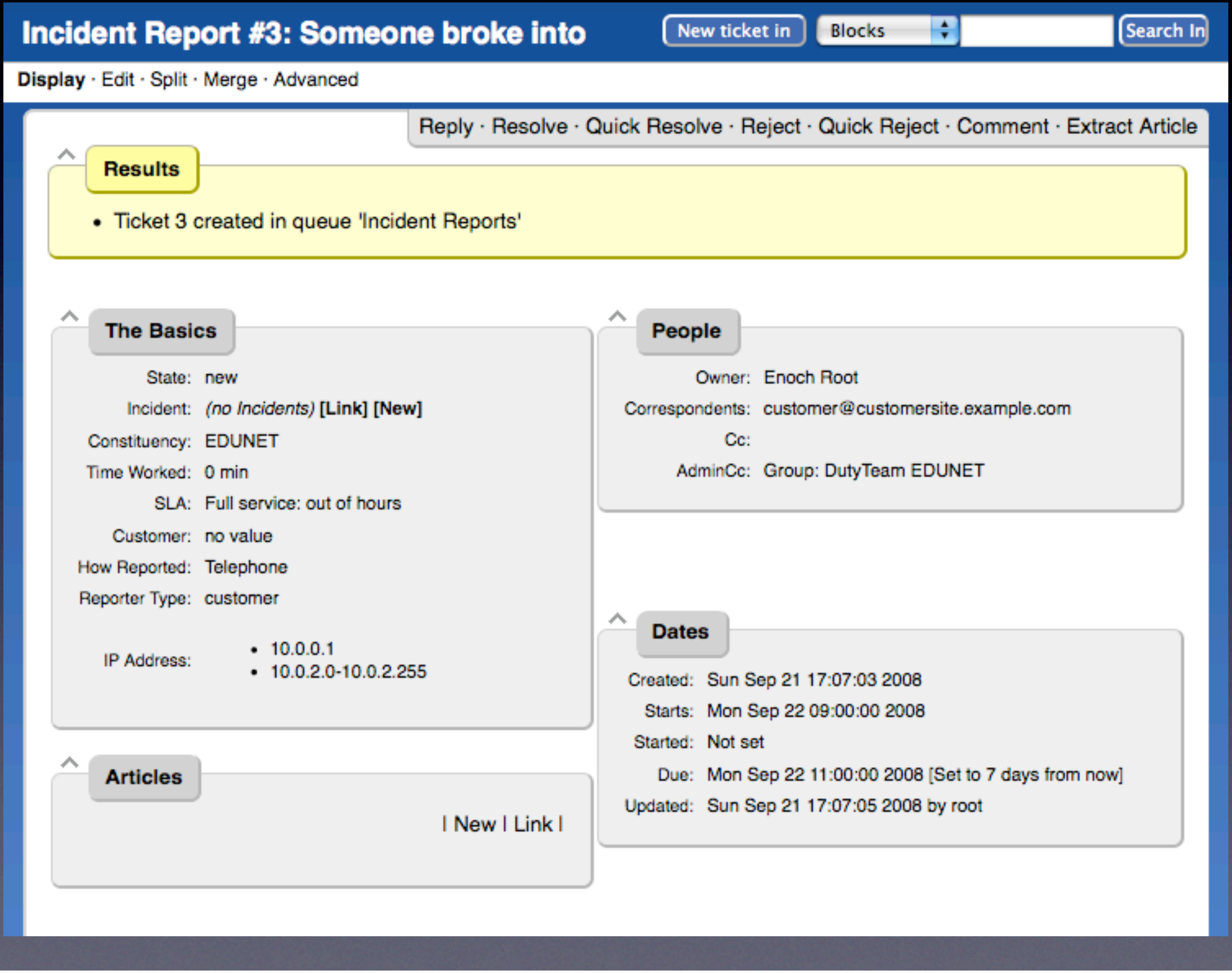
Reporter Type: (no value) / **customer** / external individual / other ISP / police

IP address:

```
10.0.0.1
10.0.2.0/24
```

Message: Customer reports that he woke up this morning to find that his server was sending lots of spam.

IR Details



Incident Report #3: Someone broke into

Display · Edit · Split · Merge · Advanced

Reply · Resolve · Quick Resolve · Reject · Quick Reject · Comment · Extract Article

Results

- Ticket 3 created in queue 'Incident Reports'

The Basics

State:	new
Incident:	*(no Incidents)* **[Link] [New]**
Constituency:	EDUNET
Time Worked:	0 min
SLA:	Full service: out of hours
Customer:	no value
How Reported:	Telephone
Reporter Type:	customer
IP Address:	• 10.0.0.1 • 10.0.2.0-10.0.2.255

People

Owner:	Enoch Root
Correspondents:	customer@customersite.example.com
Cc:	
AdminCc:	Group: DutyTeam EDUNET

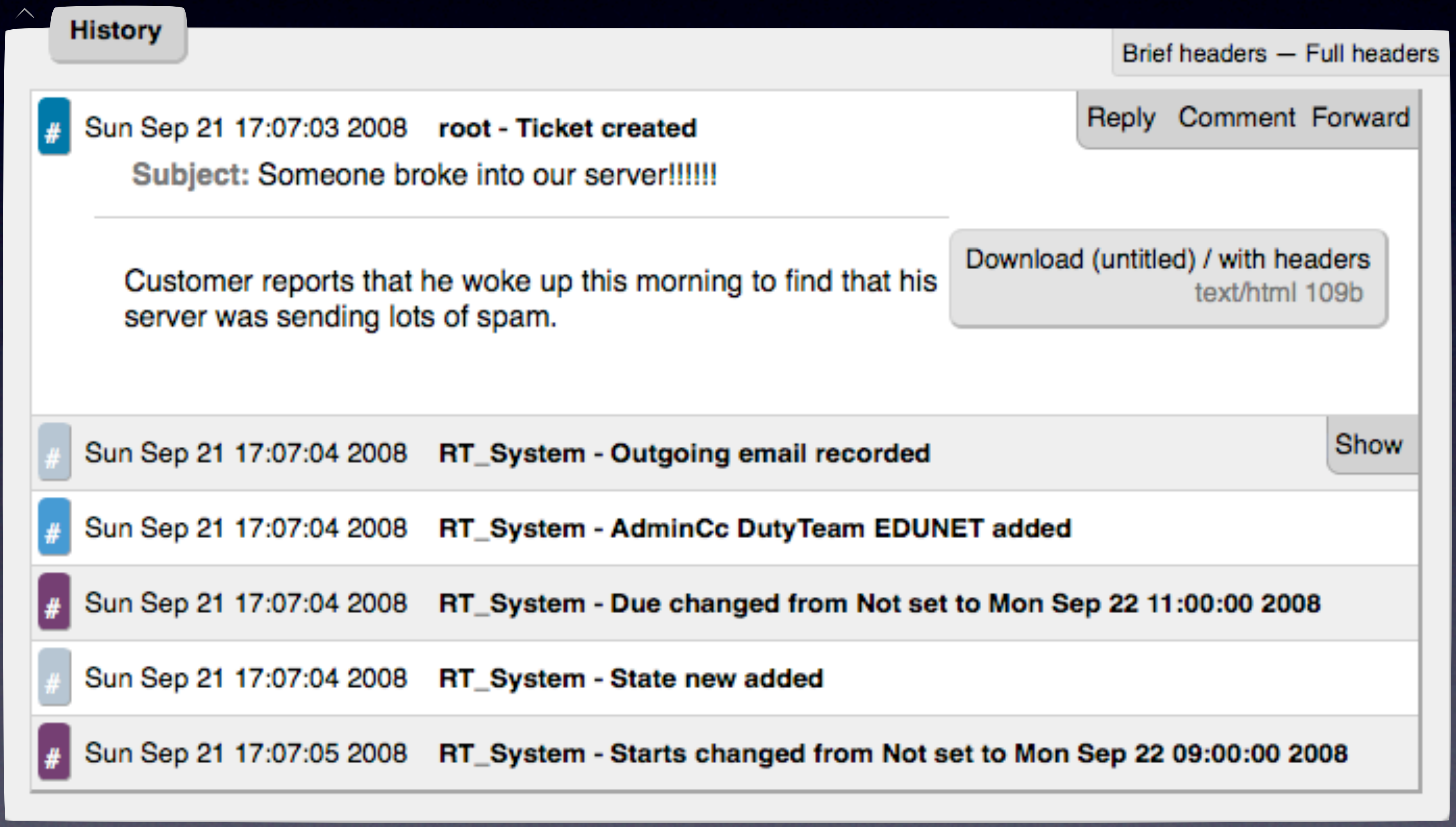
Articles

| New | Link |

Dates

Created:	Sun Sep 21 17:07:03 2008
Starts:	Mon Sep 22 09:00:00 2008
Started:	Not set
Due:	Mon Sep 22 11:00:00 2008 [Set to 7 days from now]
Updated:	Sun Sep 21 17:07:05 2008 by root

IR History


History
Brief headers — Full headers
Reply Comment Forward
Download (untitled) / with headers
text/html 109b
Show

Sun Sep 21 17:07:03 2008 **root - Ticket created**

Subject: Someone broke into our server!!!!!!

Customer reports that he woke up this morning to find that his server was sending lots of spam.

Sun Sep 21 17:07:04 2008 **RT_System - Outgoing email recorded**

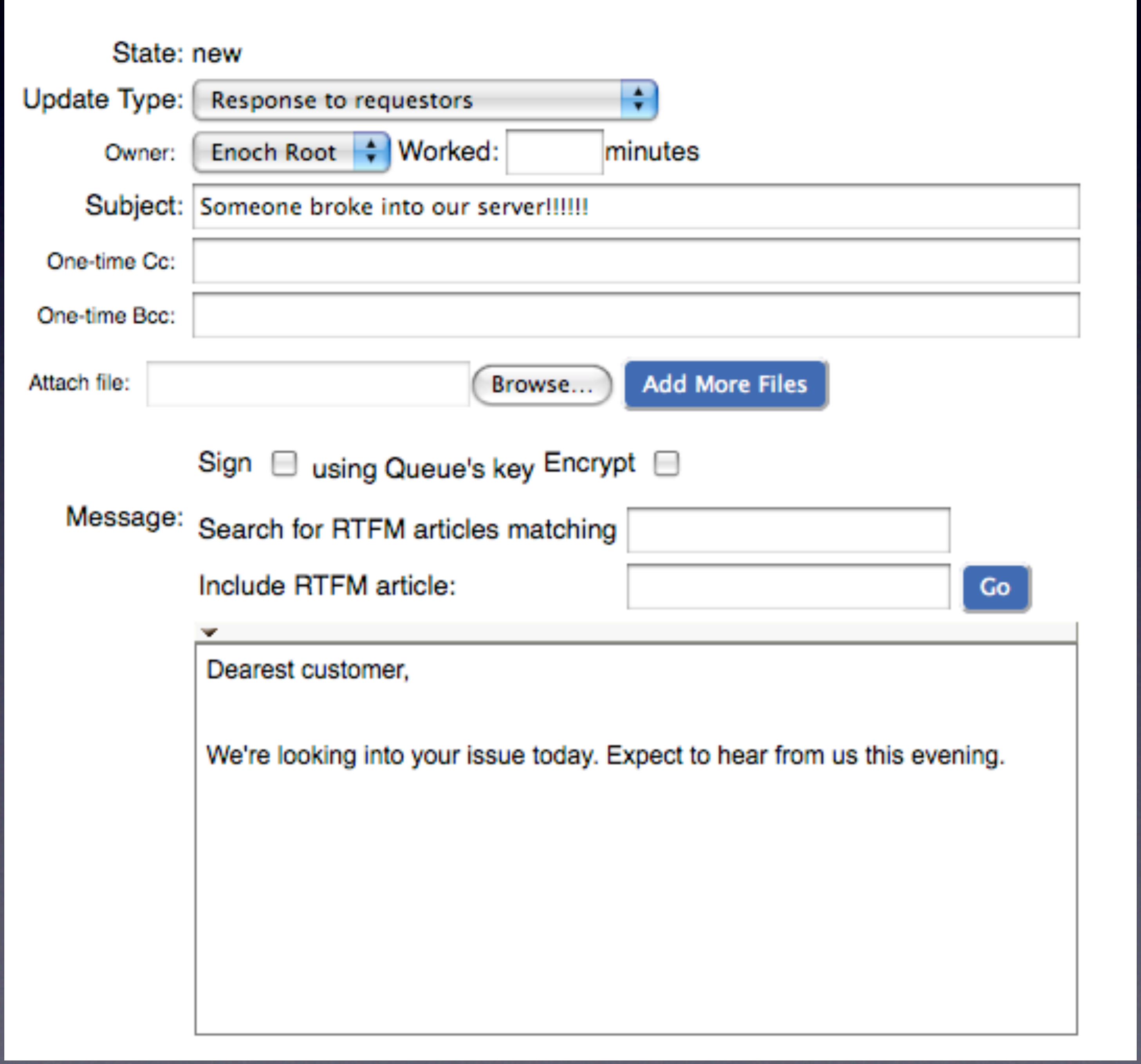
Sun Sep 21 17:07:04 2008 **RT_System - AdminCc DutyTeam EDUNET added**

Sun Sep 21 17:07:04 2008 **RT_System - Due changed from Not set to Mon Sep 22 11:00:00 2008**

Sun Sep 21 17:07:04 2008 **RT_System - State new added**

Sun Sep 21 17:07:05 2008 **RT_System - Starts changed from Not set to Mon Sep 22 09:00:00 2008**

Incident Report Reply



State: new

Update Type: Response to requestors

Owner: Enoch Root Worked: minutes

Subject: Someone broke into our server!!!!!!

One-time Cc:

One-time Bcc:

Attach file:

Sign □ using Queue's key Encrypt □

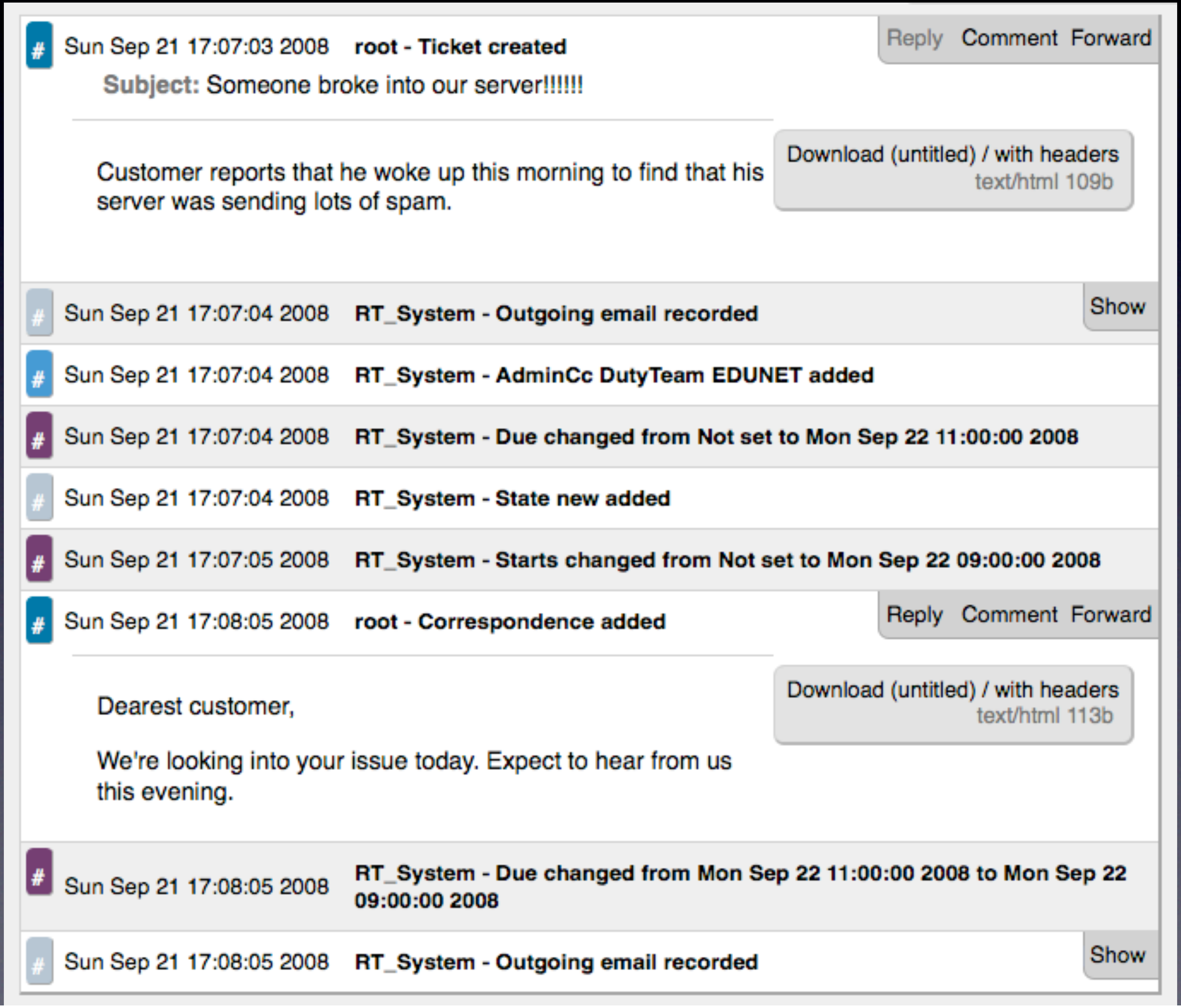
Message: Search for RTFM articles matching

Include RTFM article:

Dearest customer,

We're looking into your issue today. Expect to hear from us this evening.

Incident Report History



# Sun Sep 21 17:07:03 2008 **root - Ticket created**

Subject: Someone broke into our server!!!!!!

Customer reports that he woke up this morning to find that his server was sending lots of spam.

# Sun Sep 21 17:07:04 2008 **RT_System - Outgoing email recorded**

# Sun Sep 21 17:07:04 2008 **RT_System - AdminCc DutyTeam EDUNET added**

# Sun Sep 21 17:07:04 2008 **RT_System - Due changed from Not set to Mon Sep 22 11:00:00 2008**

# Sun Sep 21 17:07:04 2008 **RT_System - State new added**

# Sun Sep 21 17:07:05 2008 **RT_System - Starts changed from Not set to Mon Sep 22 09:00:00 2008**

# Sun Sep 21 17:08:05 2008 **root - Correspondence added**

Dearest customer,

We're looking into your issue today. Expect to hear from us this evening.

# Sun Sep 21 17:08:05 2008 **RT_System - Due changed from Mon Sep 22 11:00:00 2008 to Mon Sep 22 09:00:00 2008**

# Sun Sep 21 17:08:05 2008 **RT_System - Outgoing email recorded**

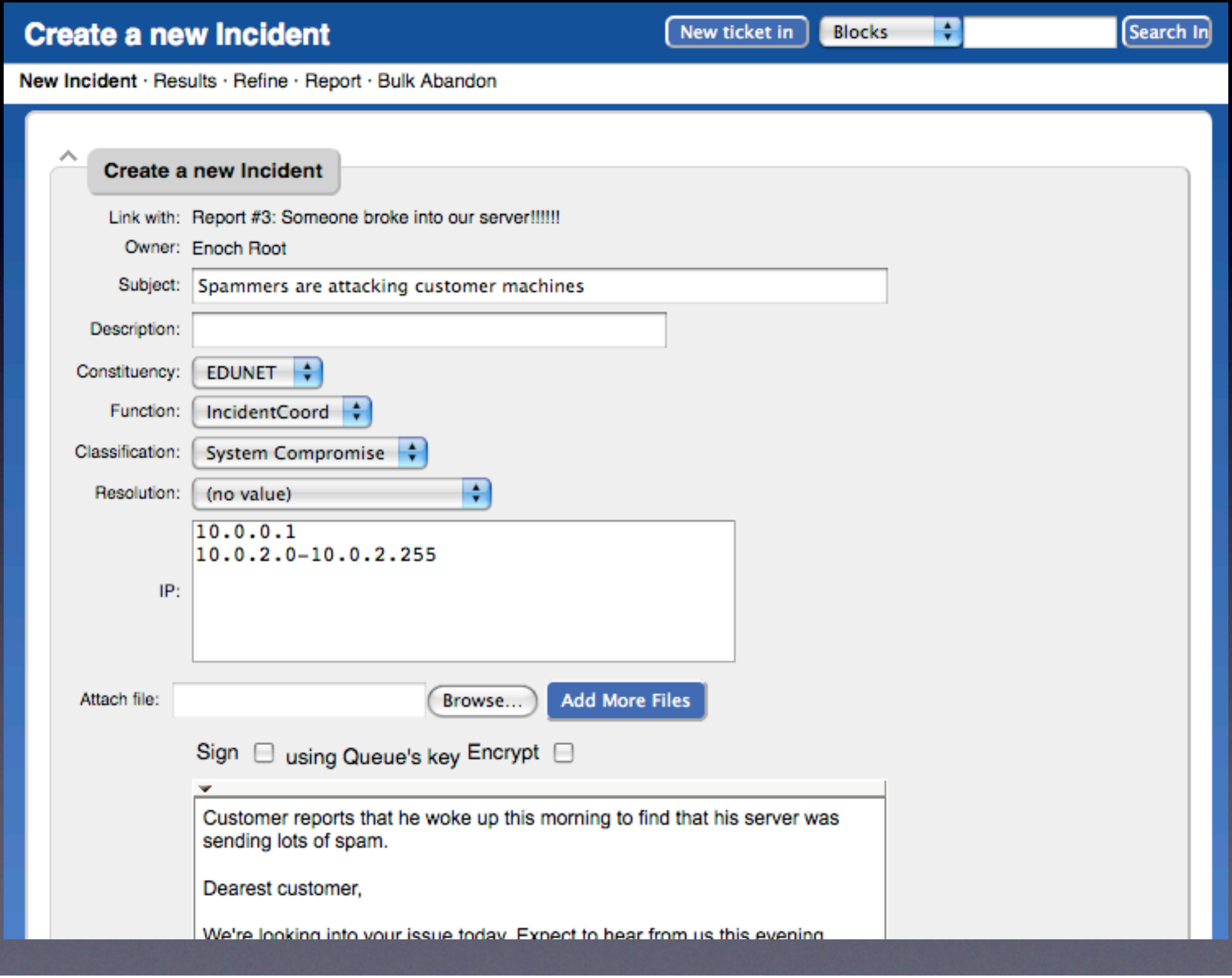
Once reported, the team tracks an *Incident*

Track what actually happened

Private / Internal

Tie everything together

Create an Incident



Create a new Incident

Link with: Report #3: Someone broke into our server!!!!!!

Owner: Enoch Root

Subject: Spammers are attacking customer machines

Description:

Constituency: EDUNET

Function: IncidentCoord

Classification: System Compromise

Resolution: (no value)

IP:

```
10.0.0.1
10.0.2.0-10.0.2.255
```

Attach file:

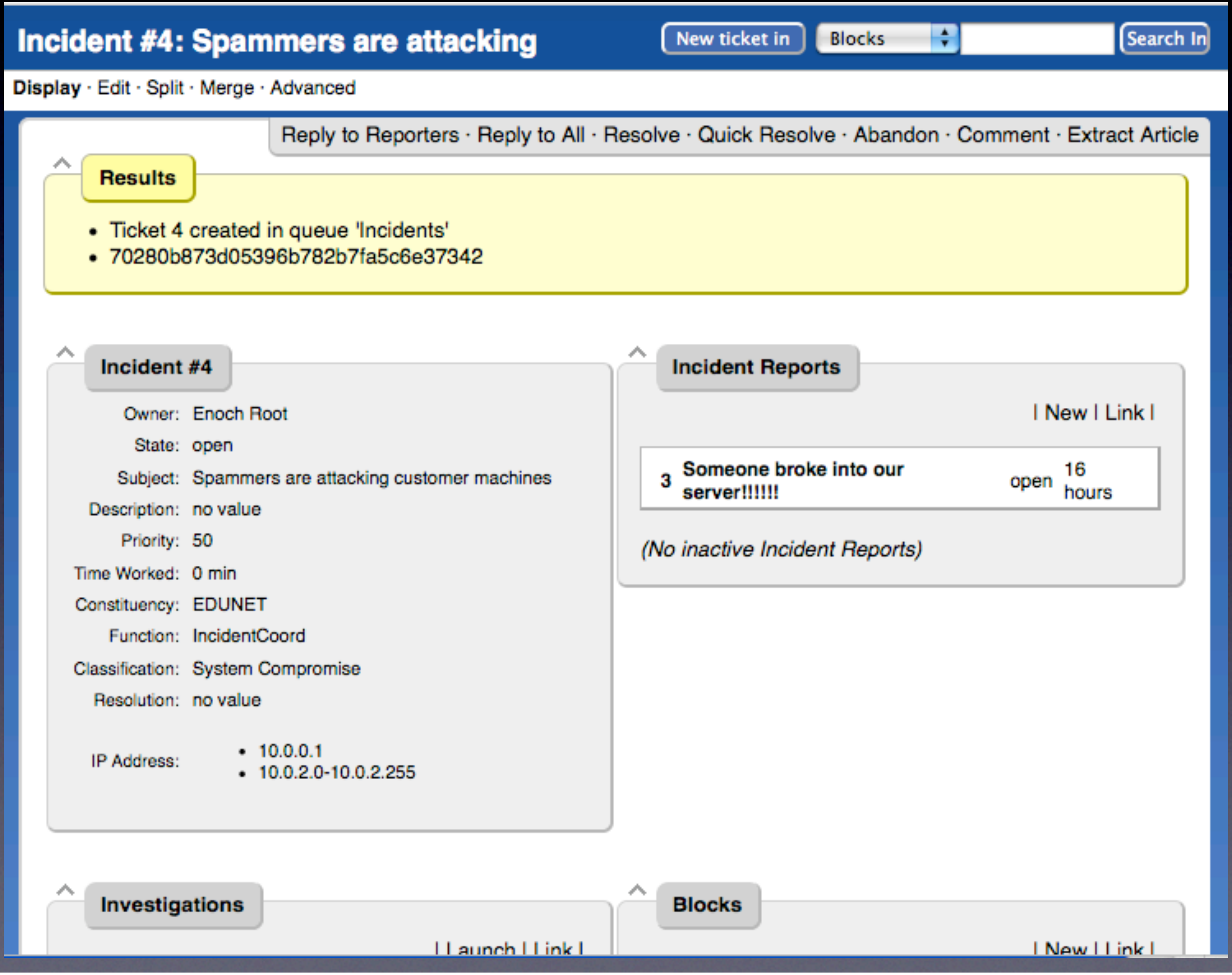
Sign □ using Queue's key Encrypt □

Customer reports that he woke up this morning to find that his server was sending lots of spam.

Dearest customer,

We're looking into your issue today. Expect to hear from us this evening

Incident Details


New ticket in
Blocks
Search In
Display · Edit · Split · Merge · Advanced
Reply to Reporters · Reply to All · Resolve · Quick Resolve · Abandon · Comment · Extract Article

Incident #4: Spammers are attacking

Results

- Ticket 4 created in queue 'Incidents'
- 70280b873d05396b782b7fa5c6e37342

Incident #4

Owner:	Enoch Root
State:	open
Subject:	Spammers are attacking customer machines
Description:	no value
Priority:	50
Time Worked:	0 min
Constituency:	EDUNET
Function:	IncidentCoord
Classification:	System Compromise
Resolution:	no value
IP Address:	• 10.0.0.1 • 10.0.2.0-10.0.2.255

Incident Reports

| New | Link |

3	**Someone broke into our server!!!!!!**	open	16 hours

(No inactive Incident Reports)

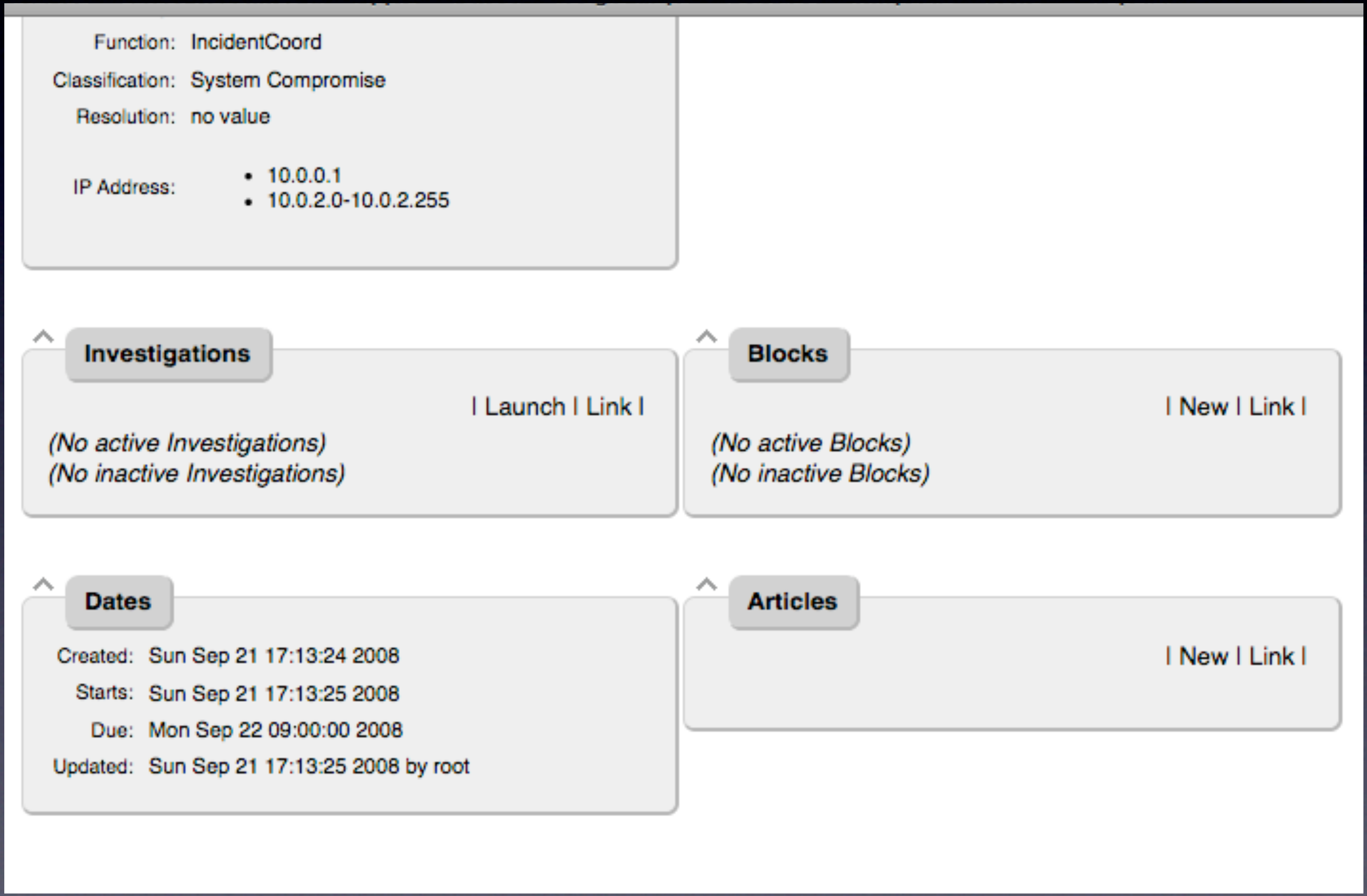
Investigations

| Launch | Link |

Blocks

| New | Link |

Incident Details #2



Function: IncidentCoord

Classification: System Compromise

Resolution: no value

IP Address:

- 10.0.0.1
- 10.0.2.0-10.0.2.255

Investigations

| Launch | Link |

(No active Investigations)
(No inactive Investigations)

Blocks

| New | Link |

(No active Blocks)
(No inactive Blocks)

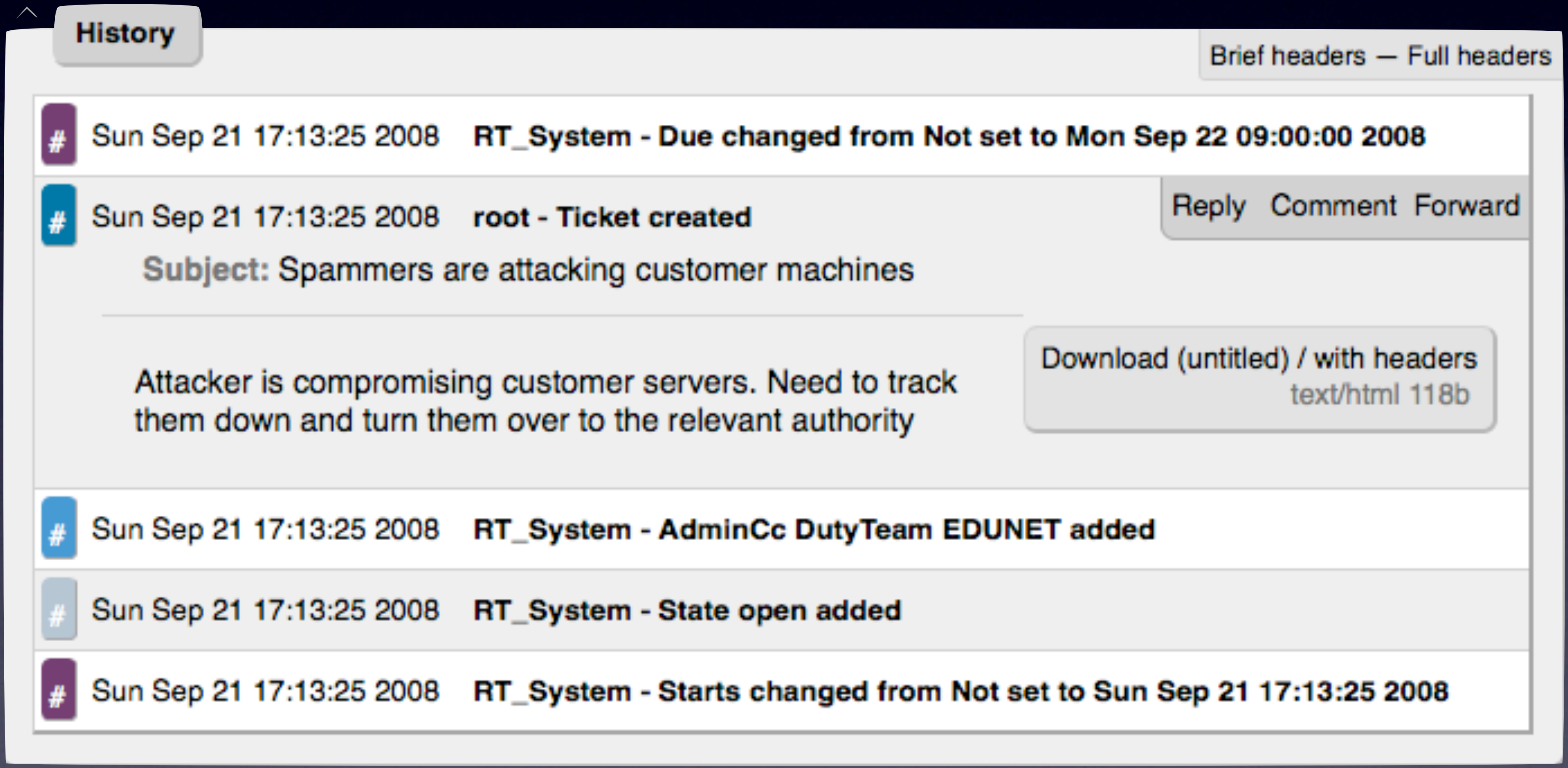
Dates

Created: Sun Sep 21 17:13:24 2008
Starts: Sun Sep 21 17:13:25 2008
Due: Mon Sep 22 09:00:00 2008
Updated: Sun Sep 21 17:13:25 2008 by root

Articles

| New | Link |

Incident History


History
Brief headers — Full headers
Reply Comment Forward
Download (untitled) / with headers
text/html 118b

Sun Sep 21 17:13:25 2008 **RT_System - Due changed from Not set to Mon Sep 22 09:00:00 2008**

Sun Sep 21 17:13:25 2008 **root - Ticket created**

Subject: Spammers are attacking customer machines

Attacker is compromising customer servers. Need to track them down and turn them over to the relevant authority

Sun Sep 21 17:13:25 2008 **RT_System - AdminCc DutyTeam EDUNET added**

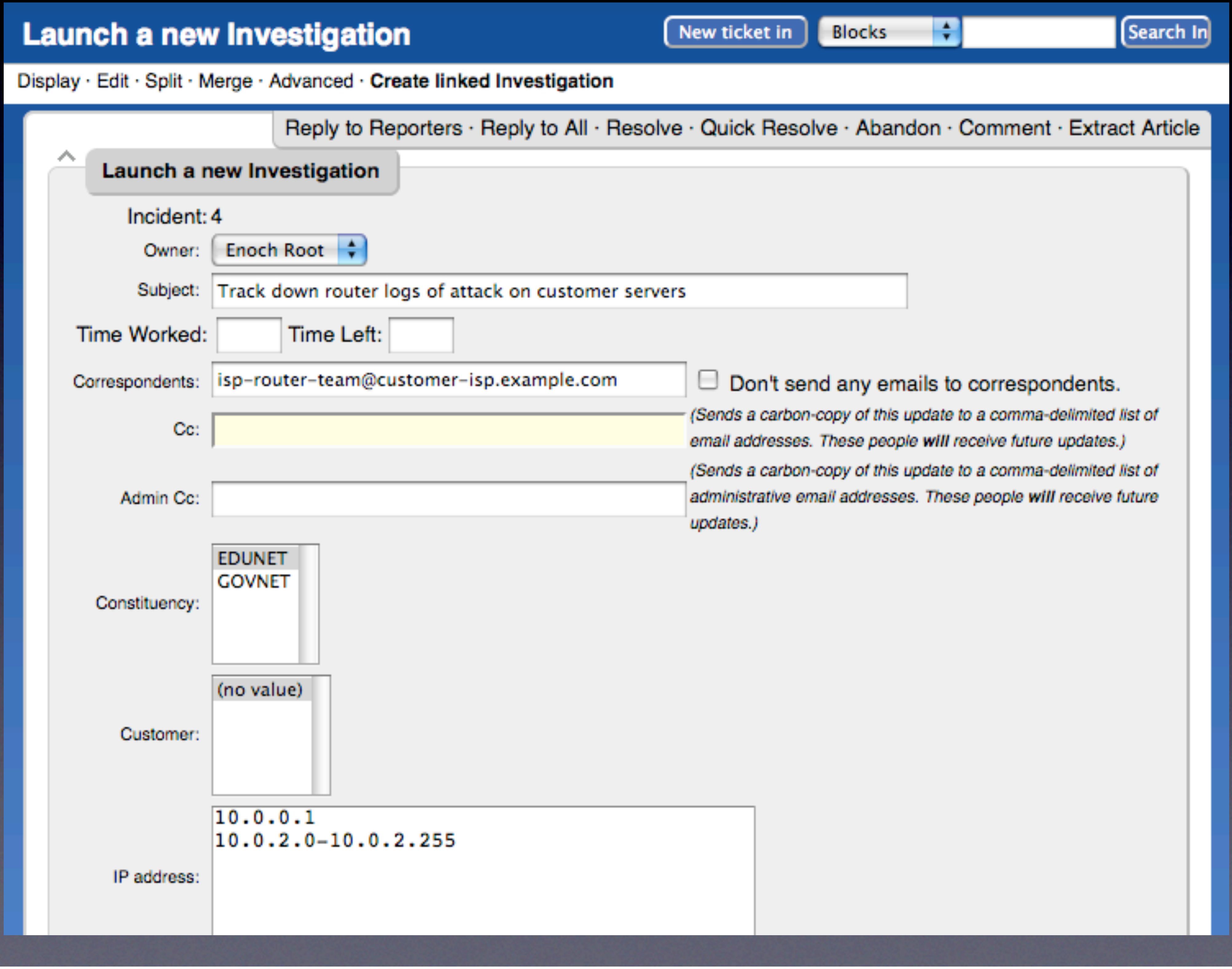
Sun Sep 21 17:13:25 2008 **RT_System - State open added**

Sun Sep 21 17:13:25 2008 **RT_System - Starts changed from Not set to Sun Sep 21 17:13:25 2008**

The team starts an *Investigation*

- Internal Research and Discovery
- Conversations with external partners
  - Law Enforcement
  - Network Providers
  - Experts

Launch Investigation


New ticket in
Blocks
Search In
Display · Edit · Split · Merge · Advanced · Create linked Investigation
Reply to Reporters · Reply to All · Resolve · Quick Resolve · Abandon · Comment · Extract Article

Launch a new Investigation

Launch a new Investigation

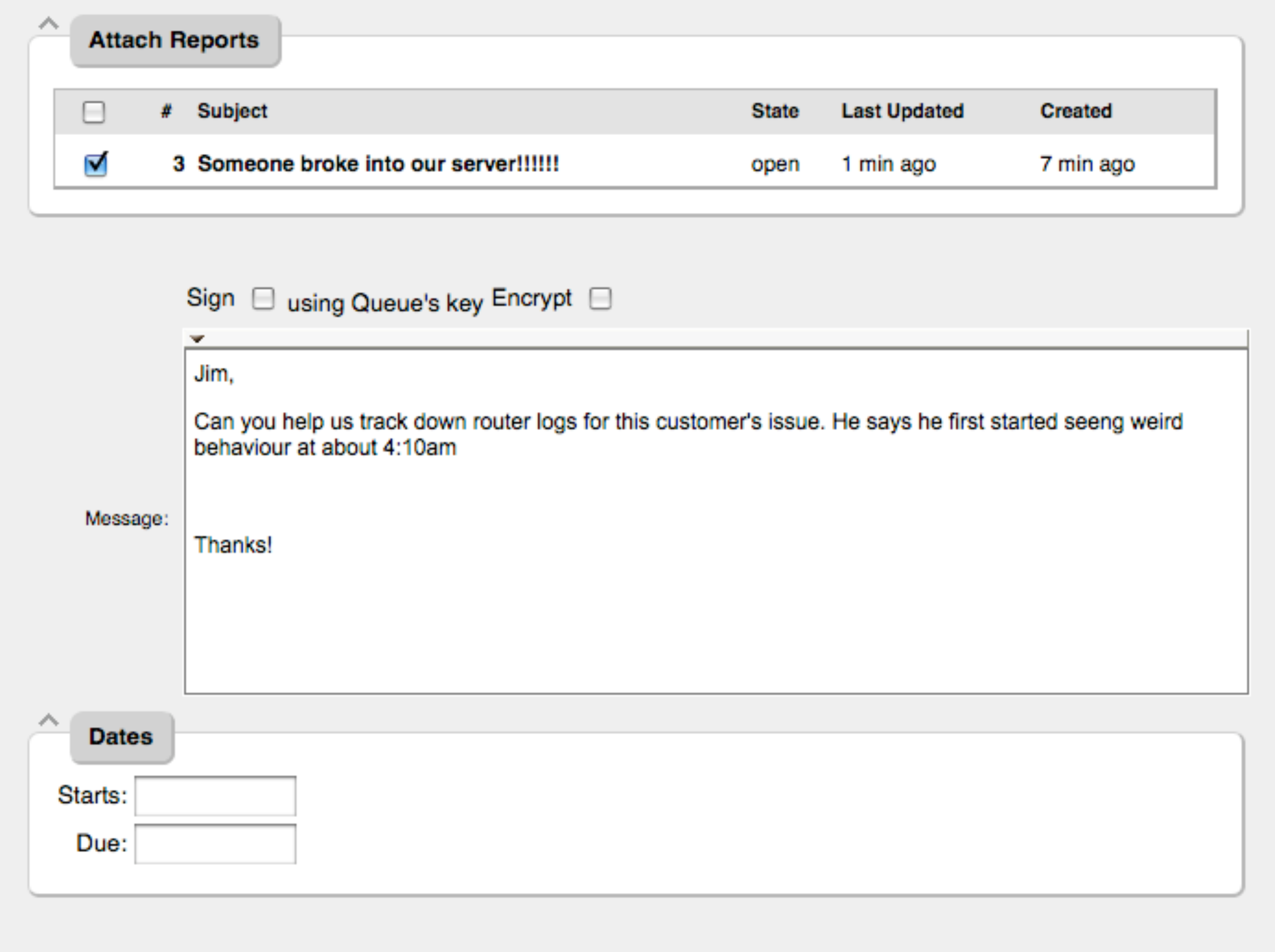
Incident:	4
Owner:	Enoch Root
Subject:	Track down router logs of attack on customer servers
Time Worked:	Time Left:
Correspondents:	isp-router-team@customer-isp.example.com
Cc:	
Admin Cc:	
Constituency:	EDUNET GOVNET
Customer:	(no value)
IP address:	10.0.0.1 10.0.2.0-10.0.2.255

□ Don't send any emails to correspondents.

*(Sends a carbon-copy of this update to a comma-delimited list of email addresses. These people **will** receive future updates.)*

*(Sends a carbon-copy of this update to a comma-delimited list of administrative email addresses. These people **will** receive future updates.)*

Launch Investigation



□	#	Subject	State	Last Updated	Created
☑	3	Someone broke into our server!!!!!!	open	1 min ago	7 min ago

Sign □ using Queue's key Encrypt □

Message:

Jim,

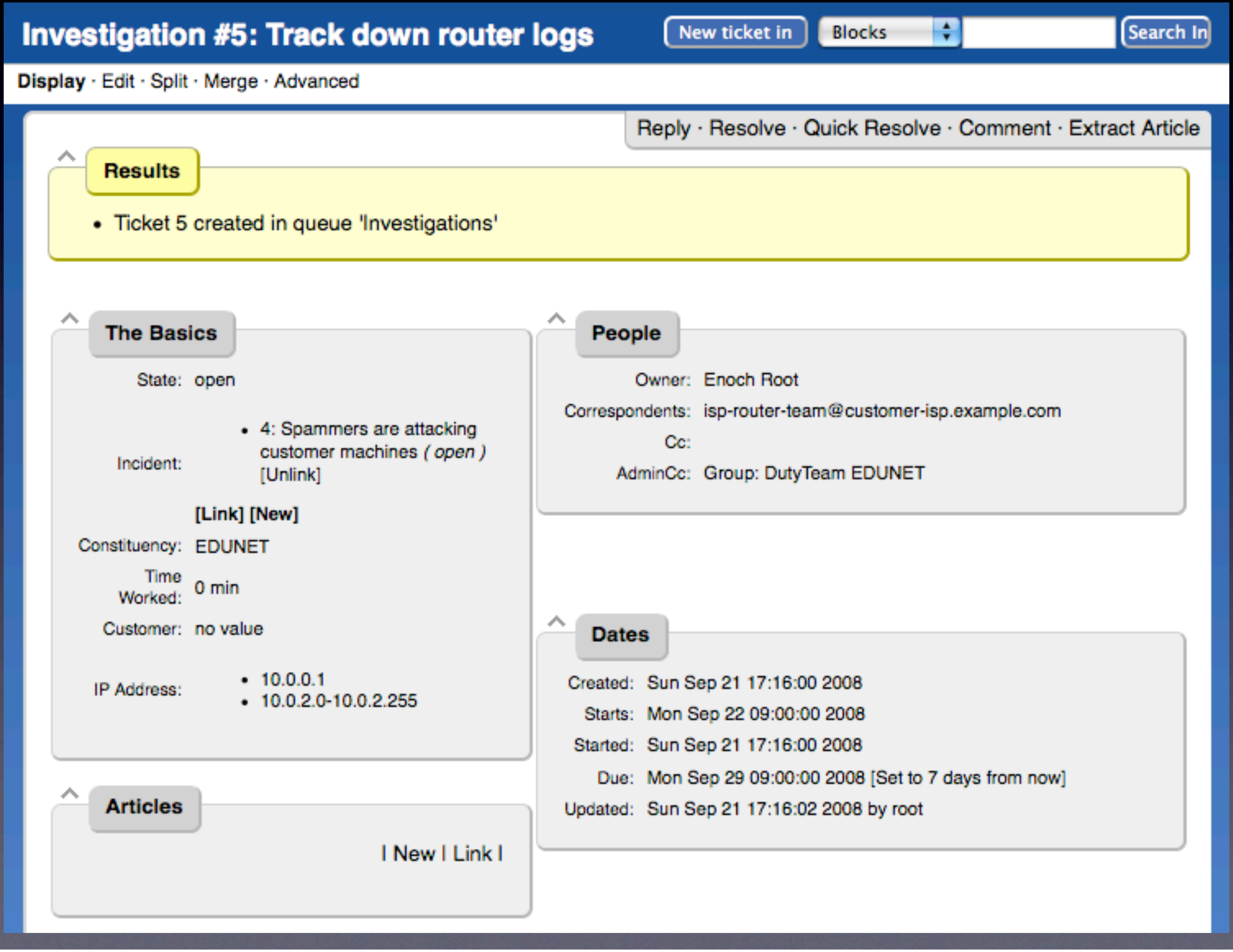
Can you help us track down router logs for this customer's issue. He says he first started seeng weird behaviour at about 4:10am

Thanks!

Starts:

Due:

Investigation Details



New ticket in
Blocks
Search In
Display · Edit · Split · Merge · Advanced
Reply · Resolve · Quick Resolve · Comment · Extract Article

Investigation #5: Track down router logs

Results

- Ticket 5 created in queue 'Investigations'

The Basics

State:	open
Incident:	4: Spammers are attacking customer machines (*open*) [Unlink]
	[Link] [New]
Constituency:	EDUNET
Time Worked:	0 min
Customer:	no value
IP Address:	10.0.0.1 10.0.2.0-10.0.2.255

People

Owner:	Enoch Root
Correspondents:	isp-router-team@customer-isp.example.com
Cc:	
AdminCc:	Group: DutyTeam EDUNET

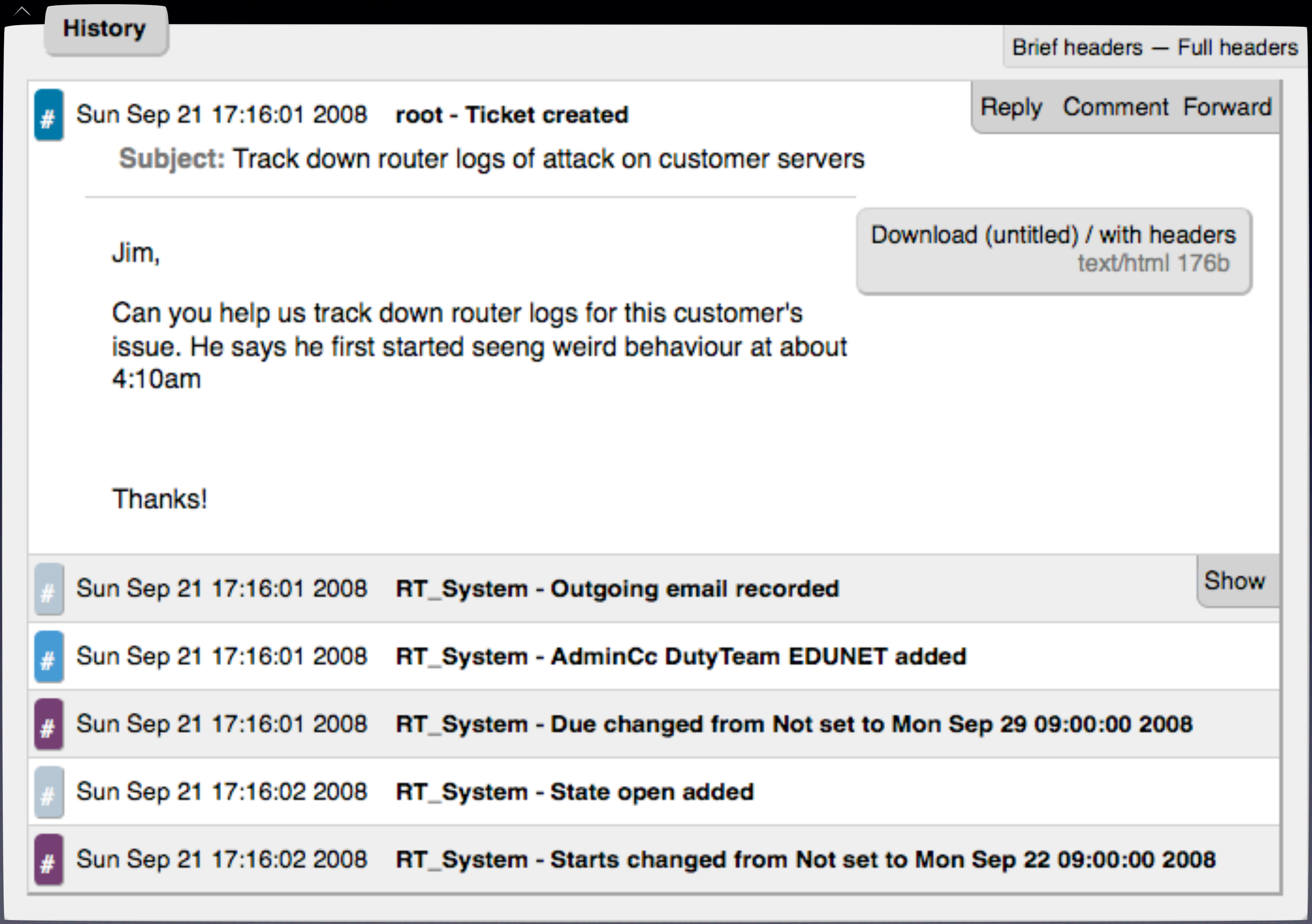
Dates

Created:	Sun Sep 21 17:16:00 2008
Starts:	Mon Sep 22 09:00:00 2008
Started:	Sun Sep 21 17:16:00 2008
Due:	Mon Sep 29 09:00:00 2008 [Set to 7 days from now]
Updated:	Sun Sep 21 17:16:02 2008 by root

Articles

| New | Link |

Investigation History



History
Brief headers — Full headers
Reply Comment Forward
Download (untitled) / with headers
text/html 176b
Show

Sun Sep 21 17:16:01 2008 **root - Ticket created**

Subject: Track down router logs of attack on customer servers

Jim,

Can you help us track down router logs for this customer's issue. He says he first started seeng weird behaviour at about 4:10am

Thanks!

Sun Sep 21 17:16:01 2008 **RT_System - Outgoing email recorded**

Sun Sep 21 17:16:01 2008 **RT_System - AdminCc DutyTeam EDUNET added**

Sun Sep 21 17:16:01 2008 **RT_System - Due changed from Not set to Mon Sep 29 09:00:00 2008**

Sun Sep 21 17:16:02 2008 **RT_System - State open added**

Sun Sep 21 17:16:02 2008 **RT_System - Starts changed from Not set to Mon Sep 22 09:00:00 2008**

Sometimes the easiest answer is just a *Block*

(Optional Feature)

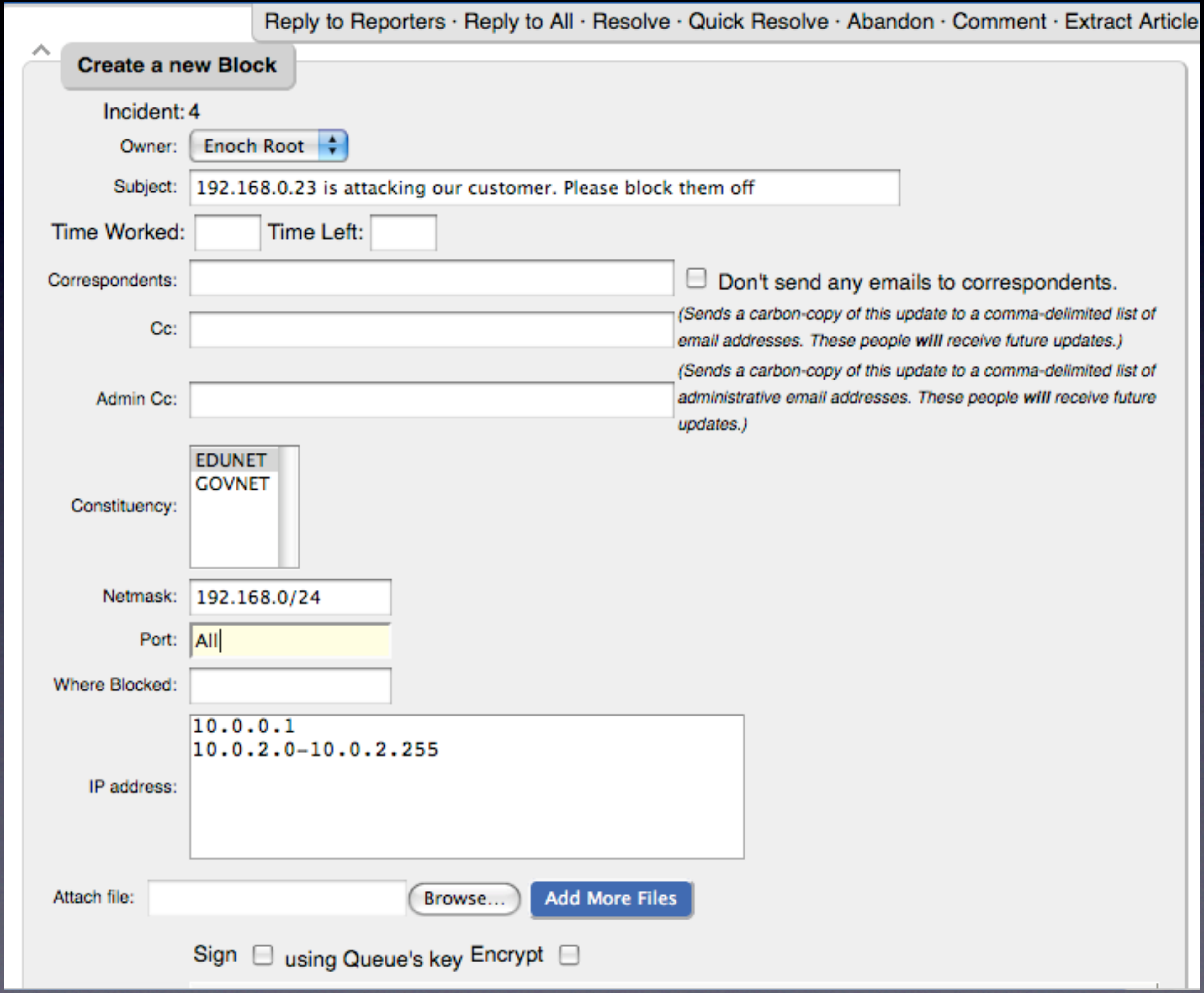
Tied to an Incident

Records of network blockades

Could autoupdate firewalls

»|« BEST PRACTICAL™

Create a Block


Reply to Reporters · Reply to All · Resolve · Quick Resolve · Abandon · Comment · Extract Article
Browse...
Add More Files

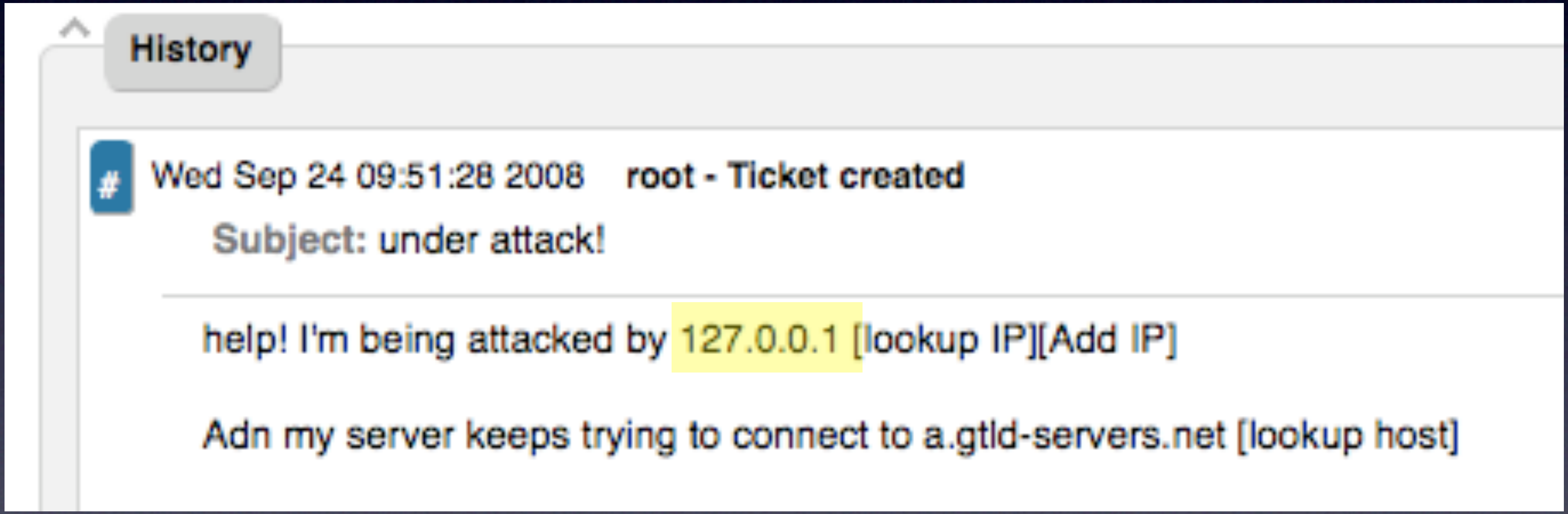
Create a new Block

Incident: 4

Owner:	Enoch Root
Subject:	192.168.0.23 is attacking our customer. Please block them off
Time Worked:	Time Left:
Correspondents:	□ Don't send any emails to correspondents.
Cc:	*(Sends a carbon-copy of this update to a comma-delimited list of email addresses. These people* ***will*** *receive future updates.)*
Admin Cc:	*(Sends a carbon-copy of this update to a comma-delimited list of administrative email addresses. These people* ***will*** *receive future updates.)*
Constituency:	EDUNET GOVNET
Netmask:	192.168.0/24
Port:	All
Where Blocked:	
IP address:	10.0.0.1 10.0.2.0-10.0.2.255
Attach file:	

Sign □ using Queue's key Encrypt □

Automatic IP Detection



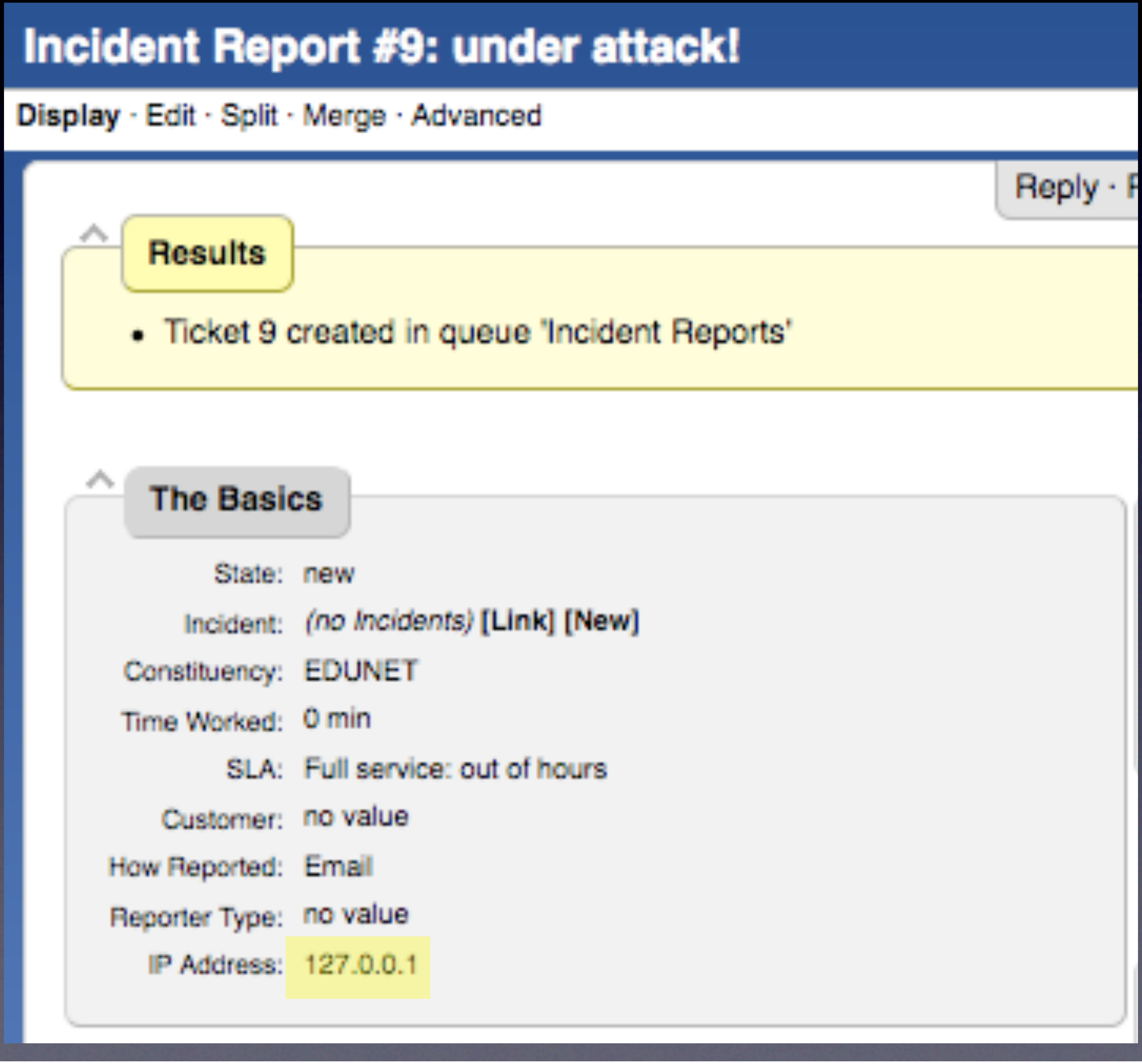
Wed Sep 24 09:51:28 2008 **root - Ticket created**

Subject: under attack!

help! I'm being attacked by 127.0.0.1 [lookup IP][Add IP]

Adn my server keeps trying to connect to a.gtld-servers.net [lookup host]

Automatic IP Detection



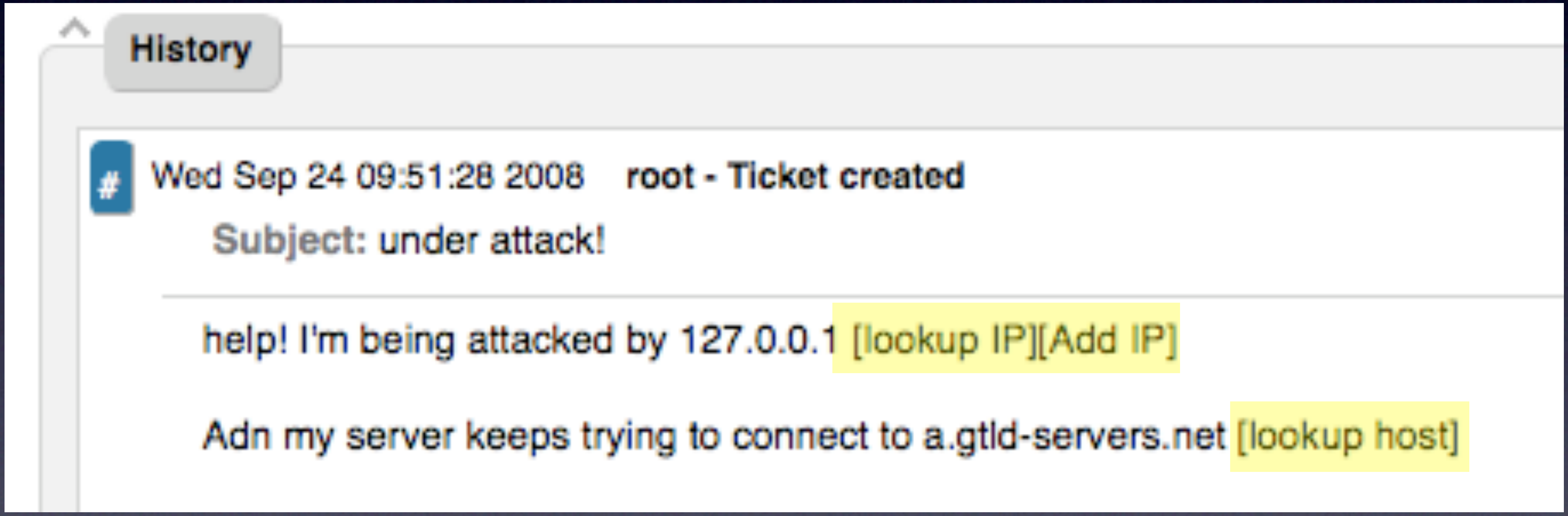
Incident Report #9: under attack!

- Ticket 9 created in queue 'Incident Reports'

The Basics

State:	new
Incident:	*(no Incidents)* [Link] [New]
Constituency:	EDUNET
Time Worked:	0 min
SLA:	Full service: out of hours
Customer:	no value
How Reported:	Email
Reporter Type:	no value
IP Address:	127.0.0.1

Data Detectors



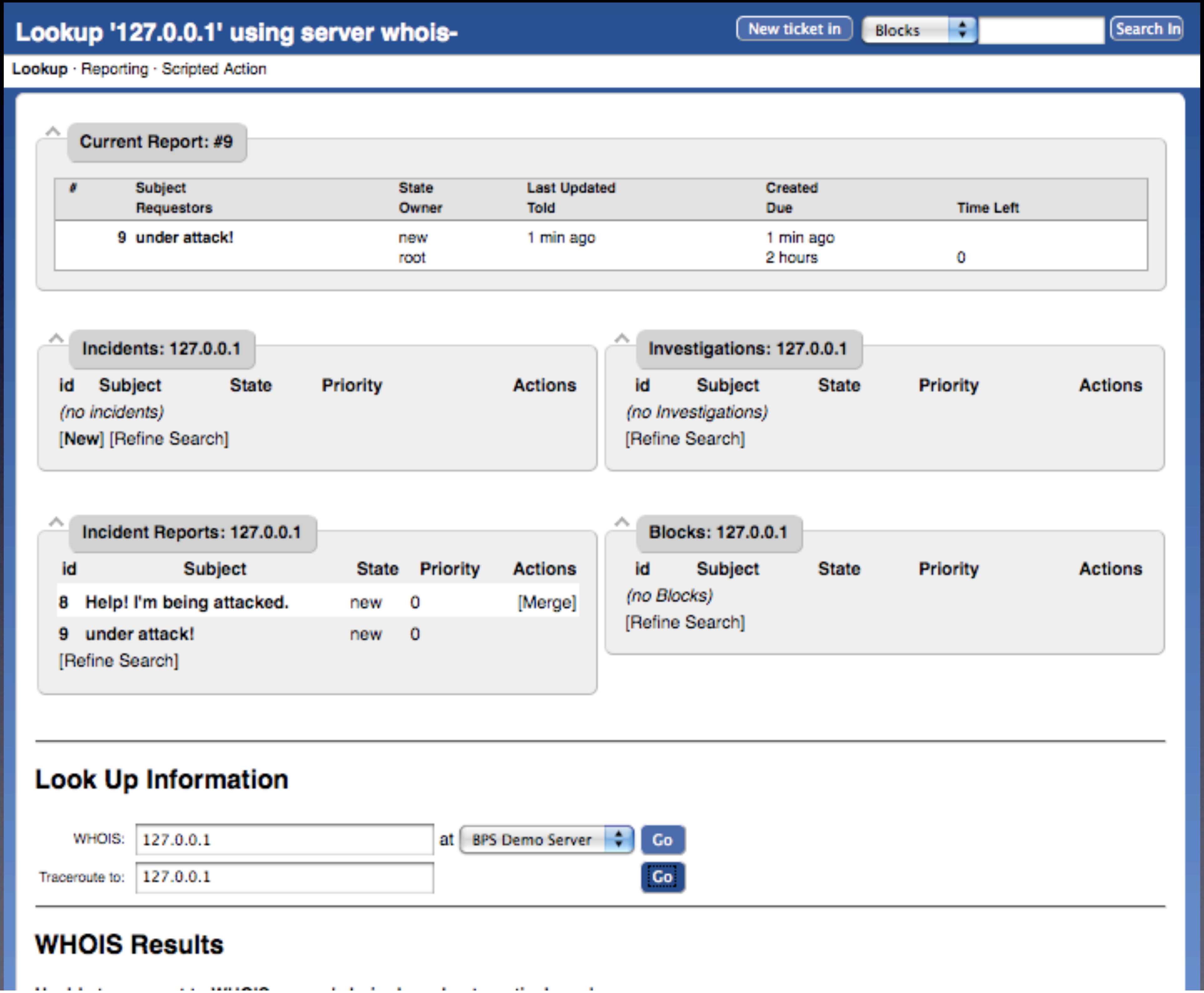
Wed Sep 24 09:51:28 2008 **root - Ticket created**

Subject: under attack!

help! I'm being attacked by 127.0.0.1 [lookup IP][Add IP]

Adn my server keeps trying to connect to a.gtld-servers.net [lookup host]

Research Tools



Lookup '127.0.0.1' using server whois-

Lookup · Reporting · Scripted Action

Current Report: #9

#	Subject Requestors	State Owner	Last Updated Told	Created Due	Time Left
9	under attack!	new root	1 min ago	1 min ago 2 hours	0

Incidents: 127.0.0.1

id	Subject	State	Priority	Actions

(no incidents)

[New] [Refine Search]

Investigations: 127.0.0.1

id	Subject	State	Priority	Actions

(no Investigations)

[Refine Search]

Incident Reports: 127.0.0.1

id	Subject	State	Priority	Actions
8	Help! I'm being attacked.	new	0	[Merge]
9	under attack!	new	0	

[Refine Search]

Blocks: 127.0.0.1

id	Subject	State	Priority	Actions

(no Blocks)

[Refine Search]

Look Up Information

WHOIS: 127.0.0.1 at BPS Demo Server Go

Traceroute to: 127.0.0.1 Go

WHOIS Results

You should be using RTIR (or RT)

Cost of RTIR: $0

Cost of required software: $0

Cost of required hardware: $0?

Operating System

Unix/Linux/FreeBSD/MacOS X/Solaris/etc

(We don’t do Windows)

Database

MySQL 4.1 or 5.0

PostgreSQL 8.x

Oracle 9x or 10.x

SQLite (for testing)

Web Server

- Apache
    - mod_perl or FastCGI
- lighttpd
    - FastCGI
- Standalone pure-perl server

RT & RTIR Community

http://bestpractical.com/rtir/

http://wiki.bestpractical.com - http://rtir.org

rtir-subscribe@lists.bestpractical.com
rt-es-subscribe@lists.bestpractical.com

rt-users-subscribe@lists.bestpractical.com
rt-devel-subscribe@lists.bestpractical.com

Muchas gracias!

Questions?

http://fsck.com/~jesse/talks/2008/09/rtir.pdf

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