



TRAMS

TICKET REPORTING & ASSET MANAGEMENT SYSTEM

Developed by Matthew Rogers and Adam Welborn

TRAMS was developed for the ResNet Help Desk at Purdue University, which manages 12,000 data connections in the residence halls and also supports off-campus dial-up and ADSL connections as well as on-campus wireless access. In the past, the Help Desk had to use several separate systems to track contacts with customers and check the status of their network connections, and staff were extremely limited in their capabilities to manage the vast amounts of network data being constantly collected by Purdue servers.

This most recent version of TRAMS, deployed by Matthew Rogers and Adam Welborn in July 2004, made a final push to integrate all of ResNet's systems (ticket reporting, network management, a knowledge base, and much more) into a single flexible, powerful framework. During development, ease of use and efficiency were constantly balanced with the manipulation and display of massive amounts of data. While having all of the capabilities of ResNet's former systems *and* much more new functionality, the total code base of TRAMS was reduced by almost 50%.

The sheer number of features as well as the restricted nature of much of the information prevent many of TRAMS' capabilities from being displayed in this document. However, you can easily see the core functionality that makes TRAMS an indispensable tool to Purdue University ResNet.

TRAMS

Universal Lookup
 Add Contact/Ticket
 Contacts/Tickets
 Unresolved requests
 Answered requests
 Contacts

Search
 Disabled Ports

Administrative Tools
 Add Announcement
 Department Setup
 Dictionary
 ESurvey Admin
 Statistics
 Stats Setup
 Supernode
 Switch Management
 System Security
 Time Card Overrides
 View Time Cards

Employee Tools
 Announcements
 Ascent Project Manager
 Mac Finder
 My Info
 My Lookup History
 My Stats
 Network Scan
 Policy and Procedures
 Reference
 Schedule
 Time Card
 Time Clock

Knowledge Base
 Add Glossary Term
 Article Administration
 Article Tracking
 Assign Articles
 Image Administration
 Image Browser
 Image Upload

Answered/Resolved Requests

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ID	User	Category	Address	Status	Logged
5	61228	Virus	Earhart 713	CLOSED	01-20-2005
5	61223	Virus	ERHT	CLOSED	01-20-2005
3	61220	Network Problems	Purdue Village 214-1	CLOSED	01-20-2005
3	61212				
3	61211				
3	61210				
3	61209				
3	61202				
3	61199				
3	61194				
5	61191				
5	61190				
5	61189				
3	61184				
3	61181				
5	61178	Bandwidth	TARK 110	CLOSED	01-19-2005
3	61173	General	Off Campus Off Campus	CLOSED	01-19-2005
3	61168	Network Problems	Purdue Village 1349-5	CLOSED	01-19-2005
5	61166	Bandwidth	833	CLOSED	01-19-2005
5	61164	Bandwidth	HLTP 6	CLOSED	01-19-2005

Customer Information

Name	Shree Buth	Account	STUDENT
Email	sbuth@purdue.edu	Affiliation	Coordinated
Phone	(765) 495-5578	Email	✓
Address	Shreve 525	ResNet Authorized	✓
		ResNet Registered	✓
		PAL Authorized	✓
		Dial-up Authorized	✓
		VPN Authorized	✓
		ADSL Subscriber	✗

ID	Category	Status	Logged
53264	Bandwidth	CONTACT	10-15-2004
53142	Bandwidth	CONTACT	10-14-2004

Registrations

User	IP Address	MAC Address	Phone	Address
Shree Buth (Unknown)	129.233.238.204	00-0F-80-01-AA-95	417-765-5578	1275 third street

Switch Data

User Name	Phone	IP Address	MAC Address	PIC	Status	Switch / Port
Unknown	55578	129.233.238.204	00-0F-80-01-AA-95	SHRV-525-A	✓	SHRV-412-C2950-03 / 47
Unknown	55578	Unknown	Unknown	SHRV-525-B	✗	SHRV-412-C2950-03 / 48

Apply to checked entries:

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TICKET MANAGEMENT

TRAMS features one of the most advanced and flexible ticket tracking systems ever conceived. Not only are tickets entered by technicians while on the phone, they are also automatically created from incoming emails as well as automated processes that search the network for excessive bandwidth users, computers infected with viruses, and various other issues.

Tight **customer-contact integration** means the history of any customer is instantly reviewable. In addition, the complete network address information, bandwidth usage history, and a multitude of other data relating to the customer's use of the network and TRAMS framework tools (like Stats and PURU) is available for any person on the ResNet network. All of this data is accessible by simply entering a user name or phone number into Quick Lookup.

Department forwarding assigns a ticket to another department (when multiple departments are using TRAMS), while still allowing the original department to track the resolution of the ticket and request that the ticket be returned if necessary.

TRAMS ticket performance statistics provides quick yet detailed analysis of various ticket data, including distribution by category and creation type as well as response and resolution time.



Contact/Ticket #61199

Office Status
Jan 24, 2005

- Universal Lookup
- Add Contact/Ticket
- Contacts/Tickets
- Search
- Disabled Ports
- Administrative Tools
- Add Announcement
- Department Setup
- Dictionary
- ESurvey Admin
- Statistics
- Stats Setup
- Supernode
- Switch Management
- System Security
- Time Card Overrides
- View Time Cards
- Employee Tools
- Announcements
- Ascent Project Manager
- Mac Finder
- My Info
- My Lookup History
- My Stats
- Network Scan
- Policy and Procedures
- Reference
- Schedule
- Time Card
- Time Clock
- Knowledge Base
- Add Glossary Term
- Article Administration
- Article Tracking
- Assign Articles
- Image Administration
- Image Browser
- Image Upload
- PIERS Responses
- PIERS Results
- Search
- Statistics
- Submit Article
- Suggest Article
- My.ResNet

Customer Info						
User	Phone	Address	Cont.	Tick.	Dis.	
Wen Zhou wzhou@purdue.edu	(765) 495-7516	Hawkins 1003	7	2	1	

Ticket #61199	
Status: CLOSED	Priority: 3 Logged: Jan 19, 2005 11:09 PM
Category	Campus Resources
Ticket Type	Email
Connection	Ethernet
Ownership	Admin network
Department	ResNet
Forward To	<input type="text"/> <input type="checkbox"/> Require return <input type="checkbox"/> <input type="button" value="Forward"/>

Wen Zhou
 User
 Wed Jan 19, 2005
 11:09 PM

Hi

I live in Hawkins Hall.

Can I use printer at 7 floor in my room?

If I can, plz tell me the way to use it?

Thanks.

Matthew Zhou

PIERS

While you wait, here are some articles that might be relevant:

Installing a network printer on Mac OS X
<http://kb.resnet.purdue.edu/124&refid=2>

Connecting a network printer on Windows XP / 2000.
<http://kb.resnet.purdue.edu/125&refid=2>

Who to call if a campus or lab printer is out of paper.
<http://kb.resnet.purdue.edu/218&refid=2>

TICKETS & PIERS

Individual tickets are presented with the customer history still available for quick reference to past issues. Employees can claim ownership of a ticket, forward it to another department, add an internal response or choose to have the response emailed to the customer.

Add Response

Email user No Yes

Eligible for survey No Yes

Status: Closed (resolved)

Response:

Matthew
ResNet Help Desk
(765) 494-2200

Assign Ownership:

CC:

BCC:

PIERS

The **Purdue Intelligent Electronic Response System** automatically analyzes incoming email and My.ResNet web requests, selects the best matches from the **Knowledge Base**, and instantly emails the results to the customer. By the time an employee replies to the request in a few minutes, PIERS has often already gotten the customer started on a solution to their problem.



System Security Configuration

Department: ResNet

Office Status

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- Knowledge Base
 - Add Glossary Term
 - Article Administration
 - Article Tracking
 - Assign Articles
 - Image Administration
 - Image Browser
 - Image Upload
 - PIERS Responses
 - PIERS Results

- Users
- Groups**
- Pages/Modules
- Logs and Access

Select user group: RCC

RCC

Select system to view permissions: TRAMS

Page Permissions

- Add Announcement
- Add Contact/Ticket
- Announcements
- Bandwidth Graph
- Bandwidth History
- Call History
- Contacts/Tickets
- Daily Stats
- DB scripts
- Department Setup
- Dictionary
- Disable/Enable Ports
- Edit disabled port log
- Edit Response
- Employee Notes
- Employee Stats
- Graph from IP
- Housecall
- IP history
- MAC history
- My Info
- My Lookup History
- My Stats
- Network Flow 2

Module Permissions

- Add Reproducibility
- Add Severity
- Add/Edit Announcements
- Add/edit glossary
- Approve Articles
- Approve Images
- Approve own articles
- Axim 1
- Axim 2

Remote security

Enable remote security for this group

Remote group: RCC_remote

Allowed IPs: 128.211.191.*

Apply

Members

- Bob (bob@resnet.purdue.edu)
- Kevin (kevin@resnet.purdue.edu)
- Stanford, MI (stanford@resnet.purdue.edu)

Users Groups Pages/Modules **Logs and Access**

Security logs

View logs: System logs

Username	IP	Time	Status
bob	128.211.191.25	01-24-2005 03:49:52 PM	Success
bob	128.210.191.139	01-24-2005 03:42:10 PM	Success
bob	128.211.191.23	01-24-2005 03:34:49 PM	Success
bob	128.211.191.23	01-24-2005 03:30:18 PM	Success
jeff@resnet	128.211.191.31	01-24-2005 03:20:45 PM	Success
stanford	128.211.191.32	01-24-2005 03:07:28 PM	Success
stanford	128.211.191.32	01-24-2005 03:07:25 PM	Failed
jeff@resnet	128.211.191.30	01-24-2005 02:57:15 PM	Success
stanford	128.211.191.32	01-24-2005 02:56:59 PM	Success
stanford	128.211.191.24	01-24-2005 02:40:23 PM	Success

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Access options

Max number of failed login attempts: 5

Attempt window (minutes): 2

Timeout (minutes, 0 = indefinite): 10

Suspended IPs

IP	Suspended	Unsuspend
128.211.191.25	01-24-2005 09:40:32 PM	Indefinite

SYSTEM SECURITY

A flexible and effective group-based security system keeps the plethora of advanced TRAMS features in the hands of the appropriate employees. Users are easily added to TRAMS and subsequently to any user group you select with just a few clicks.

The **remote security** option allows administrators to restrict or completely deny access unless an employee is logging in from an approved set of IP addresses (typically the ones in the office).

All logins are recorded, as well as unauthorized page access attempts by users not authorized for those pages. A **brute-force login prevention system** allows parameters to be set for suspending access from certain IP address for a specified amount of time after a specified number of failed login attempts.

Administrators have complete control over user accounts and can reset their passwords (or have TRAMS automatically generate a new password), disable accounts, change information, and reassign users to other groups.

User-specific permissions can be set for every single page and module in TRAMS, overriding the user's group permissions and allowing complete control over security permissions for each and every user.



FLEXIBILITY

TRAMS provides options for easily changing the behavior and settings for each individual department using TRAMS. Email lists, business hours, work schedules, email templates, and more are all easily configured through **Department Setup**.

My.ResNet

TRAMS features a public portal called My.ResNet which is tied into Purdue's career account authentication system and allows students and staff to view their support ticket history and respond to tickets (which can also be done by responding to the emails sent to them). A web contact form to initiate a TRAMS ticket and the Knowledge Base are also part of My.ResNet.

KNOWLEDGE BASE

TRAMS integrates a full-fledged online knowledge base, with both administrative and public interfaces. An easy approval process, article management system, spell checker, image uploading and approval system, and keyword generation algorithm result in very professional articles. The Purdue ResNet Knowledge Base has been utilized extensively by sources outside Purdue as well; several articles on virus removal appear on Google.

The aforementioned PIERS system uses a sophisticated world-analysis algorithm to select the most helpful articles from the knowledge base when TRAMS receives an email or when a request is submitted through My.ResNet.