Automating Residence Hall Internet Signups

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ABSTRACT

As colleges and universities are moving into the realm of providing Internet connections to the residence dormitories (ResNet), the local help desk is becoming the focal point for registration and problem resolution. The University of Northern Iowa (UNI) was faced with an avalanche of 3000-4500 possible contacts for Resnet account setups in a very short time frame at the beginning of fall term. The problem was how best to automate this signup activity while providing the customer timely and reliable service. Another challenge was how to best provide the staff and students (and, if necessary, parents) with some type of reporting methods that would be accessible to all who needed the information.

UNI has used a combination of web-based applications, email, and reporting software to solve these problems. The web-based applications automate submittal of a request via email to initiate entry into our HEAT (Help Expert Automated Tools from Goldmine Software) call tracking central database. The HEAT system subsequently provides reports that are generated giving both the current status of the request and where it lies in the work queue. Additional steps are taken in order to ensure the individual request is serviced in a timely manner. Monitoring software with predefined filters is applied to the applications and notifications are automatically delivered to the appropriate managers when applications fall behind the predetermined time intervals. Additionally, as applications are completed, distributed support personnel are able to close out the work requests by using a web page application.

The audience for this paper is intended to be support personnel whose university provides Residence Hall Internet access and a central Help Desk positioned as the hub for all computer related activity. Institutions working with limited financial and human resources would also be targeted.

Keywords
ResNet, HEAT, Automatic Ticket Generation.

1. INTRODUCTION
The University of Northern Iowa has just over 13,000 students, with a Faculty and Staff of 2,800 and is one of the three regent universities located in Iowa. In the spring of 1997, the University's Department of Residence (DOR) in conjunction with the Information Technologies Services' (ITS) started an ambitious project of providing a data port for every student residing in a University residence hall. This project is, at times, referred to as a "port per pillow". The wiring project took two summers to complete and is providing 4,500 data ports. During the first year of operation over 1,100 students took advantage of this service. The second year saw these numbers grow to 2,500. The projection for the fall 2000 semester is between 3,000-3,500 data ports to be active.

The Computer Consulting Center (CCC) within the User Services section of ITS provides a vital link between the user and the ResNet manager and the hall ResNet Computer Consultant (RCC). In previous years, when ResNet was just beginning, the CCC would hand input the request for service into the Center's call tracking system. This process is a very labor-intensive activity taking an average of 3-4 minutes per call. The Center currently handles over 17,000 contacts per year. During the time frame of the first few weeks of the school year, the Center averages 800 contacts per week with waiting time in the phone queue of up to twenty minutes. Currently, the Center is operating on a call tracking system from Goldmine software called HEAT ver. 5.01 (Help Expert Automated Tools). The back end database that HEAT runs off of is currently MS SQL ver. 7.0. For reporting software, Crystal Reports Ver 7.0 from Seagate is being used.

2. PROBLEM
The problem was to develop a transaction that would be simple enough for a first time user to negotiate a secure request for a ResNet set up. In the same transaction, supply the hall RCC enough information to contact the new user; be able to provide the new user with feedback that the request was established, and where they are in the wait queue to obtain service. From the management perspective, be able to provide the ResNet manager and the hall RCC with feedback on how long the requests are taking to be initially acted upon and the length of time for the

LEAVE THIS TEXT BOX IN PLACE
AND BLANK

actual service. The software also needs to have the capability to escalate requests that have not been acted upon within a specific time period.

3. SOLUTIONS

Each of the parts of the above problems will be addressed in a flow pattern, starting with the user and the initial sign up through the reporting cycle.

3.1 Ease of Access to Sign Up

Currently ITS/User Services has six general access computer labs, with a total of 300 systems that are assessable to all UNI students. On the desktop of each system will be placed an icon that will point to the secure sign-in page, the first step in the process. A second location will be provided from the UNI student's web page. This web page is located off the main UNI campus web page at http://www.uni.edu/students/. If students do not have access to a computer at this time they may elect to go to the DOR hall secretary's office to sign up. At the office, an electronic signup page will be provided for the hall secretaries to use.

3.2 Secure Access

The reasoning behind using a secure level for this request for service was to limit the number of invalid requests that could be generated by non-UNI individuals. The access is provided through the use of a PIN (Personal Identification Number) server located at UNI. The data is updated continually from the registrar's current listing of active UNI students. To gain access to the ResNet signup form each student must enter in their Social Security Number and corresponding PIN number. This information will be passed to the PIN server, which will determine the authenticity of the individuals. If the login request is valid, the student will be given access to the ResNet signup form.

To provide security from the DOR hall secretaries' offices, the secretaries will be provided a separate WWW location in which they will enter a username and password provided by the ResNet Manager. Once authorized, the hall secretaries will have access to a subscription form similar to the secure one that the students have.

3.3 Request Form

The actual request form is easy to navigate. The forms have already been pre-filled for the students with respect to their first and last name, student identification number and email address. This information was electronically passed to the form from the PIN server. The student can see the information but not alter it. All the inputs that the student will have to make are in the form of radio buttons, selecting from drop down lists or filling in a short text box. If any of the information required is not provided, the form has a built in checking and will not allow the request to be submitted into the system until the required data is entered.
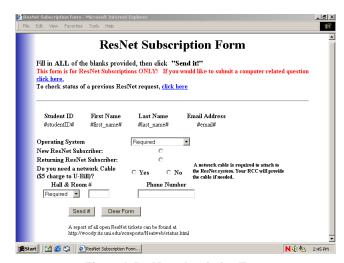

Figure 1. ResNet subscription Form

The first thing students will be asked to provide is the type of operating system that is on their personal computer. This information will give the RCC an idea of what the capabilities of the student's operating system is, and only those systems that are supported by ResNet are provided as possible selections.

The series of radio buttons are provided to make a selection of whether the applicant is a returning ResNet subscriber or a new subscriber. This information will be used to prioritize the listing of when the subscription request will be worked on by the RCC.

The final radio button is used to make a selection of whether the student will need the RCC to bring a network cable to the setup. This information can also be used to generate a charge against the student's university bill.

The last series of questions that are asked will allow the RCC to find out where the applicant is residing. The student will be asked for his/her current residence hall and the room number. Additionally, he/she will be asked for a current telephone number. The student must key in this information since during the first part of the semester administrative records of exactly where students truly reside can be incorrect for days or possibly weeks.

Once this data is collected on the signup page and all the required fields have been checked, the system emails the information to the automatic ticket generator when the applicant clicks on the "send" button. At this point the applicant has completed everything necessary to request a ResNet subscription.

The difference between the student initiated page (using the PIN server) and the hall secretary is the information that is passed back by the PIN server. The DOR hall secretary will have to manually enter data into text boxes for the individual making the request. All the other fields are exactly the same.

It has been estimated that a student can fill out the request form, including getting data via the PIN server, in approximately three minutes.

3.4 Automatic Generation of the Request

As stated earlier, the CCC uses a call tracking software called HEAT. The module incorporated in this software package will automatically generate a call-tracking request. The module is referred to as Automatic Ticket Generation (ATG). This module is set to look at the inbox of a selected email address and pull data from the email messages. The email must conform to one of these standard formats, Vendor Independent Messaging (VIM) or Messaging Application Program Interface (MAPI) format; MAPI is the format used at this university. Although Netscape messenger will access MAPI applications, it was found that Microsoft's Outlook Express provided the best link to the ATG module. Before getting into the specifics of the transfer of data the applicant has sent the system, it should be noted the ATG has the capability to not only create tickets but to also update existing tickets and to close out ones for which the work has been completed.

3.4.1 Configuration of the email client

Once the data has been collected, the email is sent by use of the send mail command to a specific email address reserved for just this transaction. Microsoft Outlook is configured to send and receive email automatically on a ten-minute cycle. It is also configured as a Post Office Protocol (POP) client; all mail that comes in is brought down to the local hard drive immediately and not left to accumulate on the mail server. Periodically, the local inbox on the PC must be manually cleared out with processed messages moved to an archive folder located on the hard drive. Volumes of messages in excess of one hundred have not been known to effect the processing of requests.

3.4.2 Configuration of the Auto Ticket Generator

The correct configuration of this module is paramount to a successful request/ticket generation. One of the most important decisions made was to utilize the PIN server data rather than data from the Profile table that is located in the HEAT database. The problem that developed was the HEAT database was not current and keeping this data updated in a timely manner was impossible. The HEAT profile feature is not being utilized in generating this type of request but is utilized in other Help Desk functions.

When the ResNet subscription request is transmitted via email, the message body contains data that is presented as field names. For example, the responses to the question for First Name from the web page is contained in the email as "first_name: Joe". ATG has the capability of looking through message text and finding predefined field names and extracting the data. This data can then be placed in the corresponding HEAT database fields for the generated request. An example of the email message can be seen in Figure 2.

```
----- Original Message -----
From: <jack.miller@uni.edu>
To: <cccres@iscsun.uni.edu>
Sent: Wednesday, June 14, 2000 10:40 AM
Subject: WWW Form Submission


 Below is the result of your feedback form.  It was submitted by

 (jack.miller@uni.edu) on Wednesday, June 14, 2000 at 10:40:21
------------------------------------------------------------------------
SUBJECT: Resnet Subscription form
CustID: 101010
Firstname: Joe
Lastname: Panther
OpSystem: Mac 9.0
Resnet_Status: Returning_Resnet_Subscriber
Cable_Needed: True
Building: BEN
Room_Number: 123
phonenbr: 222-3456
```

Figure 2. Example of the email transmitted to ATG

In the table below the critical items that need to be passed to the ATG are the first six items listed. The remaining items are not considered critical for the generation of the request. There are additional items that are automatically added to the request as it goes into the database, but all these are retrieved from the system, such as time and date, who is logging in the request and under which call type the request is to be placed.

Table 1. Web vs. ATG fields

Web page field	Data example	ATG Field
Student ID	101010	CustID
First_Name	Joe	Firstname
Last_Name	Panther	Lastname
Building	Lawther	Building
Room	123	Room
Phone	222-2222	Phonenbr
Email	Joe.panther@uni.edu	Email
New/Return Subscriber	New_Resnet_Subscriber	ShortDesc
Network Cable	Y/N	Network_Cable
Operating System	Windows 95	CallDesc

To insure that unprocessed email does not accumulate in the inbox, ATG is set to check the inbox every three minutes. Once a request is processed, the email address of the requestor is used to send back a message stating that a ResNet subscription request has been processed for the supplied student ID number and gives the system call ID (tracking number) for that request.

4. SOLUTIONS FOR REPORTING

All the solutions for reporting the status of a request will be made through a web interface. This interface uses the report generating software Crystal Reports by Seagate. Inside the software is a web interface that allows us to produce reports on demand. From the administrative side, the refresh rate can be set to any given interval of time. For this project we elected to use a five-minute report refresh rate.

4.1 Students Report

This report contains information including; time and date that the request was submitted, student ID number, Call ID (tracking number), and the request for a network cable. Requests are sorted by whether they are new subscribers or returning subscribers. A second sort is for their hall, and the last sort is the date and time the request was received. For privacy, names and actual room locations are not printed on this report (an example of this report can be seen in Appendix A). These reports are accessed from the web by way of a central page that gives instructions on how to read the report and to select the subscriber's specific hall report. URLs are pointed to the central page from several locations, for example, the main student page and from inside the secure request form page.

4.2 RCC Report

RCCs will need more information than the student report pages can provide. The RCC report provides name, location (hall and room number), phone number, type of request (new or returning), type of operating system, date the request was made and the call ID (tracking number). Additionally, any partial work done on the request is added to the journal portion of the request and will be displayed in this report only. As in the student report, the sorting will follow the type of request, then the hall and lastly the date and time of the request (an example of this report is located in Appendix B). This report will be accessed via the web by way of the ResNet server and is username and password protected.

5. MANAGEMENT

Once the requests are submitted and the RCCs have hundreds of requests to track, how do we prevent requests from falling by the wayside? The answer lies in another module that comes with the HEAT software, Auto Escalation. Auto Escalation works off the last modified date in the request and compares it to a Boolean statement that is predefined by the administrator of the system. This comparison check is set to run at specified time intervals. Once a request is identified that is outside the comparison criteria (no action taken), a number of events can take place, depending on how Auto Escalate is configured. It may be set up to append

the journal portion of the request with a pre-canned statement, send an email to a predefined location or do both of these action simultaneously.

Additionally, one can set the escalator to make an initial look at the request then sleep on the request for a longer period of time. An example of how this could be setup is as follows: one can have the Auto Escalator look at the request 24 hours after it has been created to see if it had been modified (i.e. has the RCC made any changes yet). If none have been made, the Auto Escalator will email the RCC with a reminder note that the ResNet request exists and nothing has been done about it yet. Next the Auto Escalator is set to look again at the request after three days; if nothing has been done then it automatically sends email messages to the RCC and his/her supervisor and makes a journal entry into the ResNet request. All the journal entries show up in the ResNet report (an example can be seen in Appendix B).

6. CONCLUSION

By providing the students with the web page access to make a subscription request and status checks, not only is the time it takes to enter the request into the system reduced but also reduced is the human intervention and corresponding errors that can create invalid requests. From the management side, the data that has been collected will be the most current and useful for the RCCs to utilize. This data in turn should allow RCCs to process the requests on a timely basis, the ultimate goal of this project. Additionally, management reporting will provide facts and figures so that service answers are readily available and timely adjustments can be made.

7. ACKNOWLEDGMENTS

Appendix A.

Open ResNet Activity - Listed By Date Received

Student ID #	Call ID	Recvd Date	Recvd Time	Mod Date	Need Network Cable
					Printed on: 6/29/200011:25AM
					Next update in 5 mins.
BENDER					
101010	36490	5/9/2000	15:51:18	5/9/2000	**Yes**
101010	36499	5/10/2000	15:11:03	5/10/2000	**Yes**
101010	36500	5/10/2000	15:11:05	5/10/2000	**No**
101010	36501	5/11/2000	14:40:54	5/11/2000	**Yes**
101010	36502	5/11/2000	14:40:59	5/11/2000	**No**
101010	36503	5/11/2000	14:41:01	5/11/2000	**Yes**
101010	36504	5/11/2000	14:41:02	5/11/2000	**Yes**
101010	36505	5/11/2000	14:41:04	5/11/2000	**Yes**
101010	36508	6/1/2000	16:26:01	6/1/2000	**Yes**
101010	36509	6/13/2000	08:51:28	6/13/2000	**Yes**
101010	36514	6/14/2000	10:43:36	6/14/2000	**Yes**

Appendix B.

RESNET Open Problems

	Last update:	6/29/2000	1:05:34PM
			Next update in 5 mins

ESR #	NAME		BLD	RM	PHONE	
RCVD DATE			Call Description			Need Network cable
Noehren						
		NRN	276	3192223688		
35,403	SCOTT WEBER					
03/21/00						**No**

Initial request for ResNet installation

Requesting Resnet setup

		2000-03-24	**Time Sent**		**17:11**	

Sender ID   **paytonj6850**

Subject   **Update**

Message Text   **Submitted at Thu Mar 23**

17:10:36 2000 from 134.161.72.134 by ???

updateOrFixed: worked on

Hall: Noehren

Room: 276

Equipment_Type: IBM 386

Description: Called Scott and left a message

JOBTIME: .25

realname: john payton

HTN: 35403