To: MTB Distribution

From: Greg Texada

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Subject: A tool for Standard Error List maintenance

INTRODUCTION

This MTB describes a command, edit_error_list, which allows the creation and maintenance of Multics Standard Error Lists, and provides an automated interface to the Multics Trouble Reporting System (MTRS). This command operates on a "lister" data base, allowing the entire spectrum of lister commands to be utilized to provide customized output.

PURPOSE

The use of the edit_error_list command by developers obviates the need for them to submit MTRS transactions separately from error list maintenance and provides for some degree of standardization of error lists. This standardization makes the automated submission of MTRS transactions possible without developer intervention, and allows multiple MTRS transactions for a single error list entry, when appropriate. Additionally, it will provide a simple (hopefully), and convenient method of error list maintainence for those developers who do not wish to create their own tools.

WHY LISTER?

Considerable comment, in the continuum error lists meeting, was generated about the choice of lister vs. MRDS/MRPG. Lister was chosen because it requires little work in the initial implementation and it (lister) already has the necessary capabilities to generate reports (or info segs) via a very simple mechanism. The major drawback of using a lister data base (as was mentioned in the error lists meeting) is the 255 record limitation. This limitation is currently being addressed by the lister developer, and hopefully will be resolved before the limit is reached by an error list.

CONVERSION

Initially, I don't believe I can provide a general enough tool to convert existing bug lists. However, after the initial implementation of edit_error_list, I will address a method of conversion by those who want it. Suggestions as to methods of conversion would be entertained, but implementation time must be a prime consideration in any proposal.

TR SYSTEM INTERFACE:

An interface will be provided between existing error list maintenance tools and the TR system, in the form of an extended answer_trouble_report command.

A new -error_list_info (-eli) control argument has been added. Its usage is:
  -eli error_file_name error_file_entry_number
For example,
  -eli pl1 2587

This new field references an error list entry associated with the TR. The error list information will appear as the answer to the "error list info" field when the TR is printed.

A new -linked_tr (-ltr) control argument has been added. Its usage is:

  -ltr {numbers}

where the numbers which follow are TR numbers of reports associated with the report being answered. These associated reports will inherit the answer given in this invocation of atr. This avoids invoking atr for each of the reports. The associated TR numbers will appear as the answer to the "linked trs" field.

The operands for the -linked_trs control argument are optional to facilitate use of -linked_trs from error_list maintenance tools. For example, if an error list entry contains 5 associated TR numbers, the error list tools which changes the state of the entry could invoke atr as follows:

  do "atr -rql -rq send &4 -state &3 -eli &1 &2 -linked_trs &f5"

with arguments which were:

  error_list_name error_list_entry_number new_state assoc_tr_numbers

Exactly the same calling sequence would work if only one associated TR number were present in the error list entry.

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Name: edit_error_list

     The edit_error_list command performs the functions necessary
to create and maintain a Multics "Standard" Error List. In the
default mode of operation, edit_error_list enters a request loop
where it reads user requests from the terminal until the quit
request causes it to exit.

     For the sake of simplicity and flexibility, edit_error_list
operates on listin files (See AZ98 Section 7 for the description
of lister and listin files). In order to implement certain
requests, the comment feature of lister will be employed.
Specifically, the next_entry_number. set_default_value,
set_prompt_(on off) requests will be implemented to store
certain values in lister comments. It is imperative for the
proper operation of edit_error_list that these comments not be
moved, changed or deleted except via the appropriate
edit_error_list request.

     The "interface" employed by edit_error_list with the MTRS is
via the answer_trouble_report command.

Usage:
          edit_error_list NAME {-control_args}

where:

1. NAME
            is an error list name. If NAME does not have a suffix
            of error_list, then one is assumed. However, the suffix
            error_list must be the last component of the segment.
            If NAME contains a "<" or a ">" then it will be used
            as the pathname of the error_list. Otherwise, the
            error_list search list will be used to find NAME. The
            default error_list search list is >doc>iis>error_lists.

2. control_args can be chosen from the following:

  -request STR, -rq STR
            specifies an initial request line to be executed
            prior to entering the request loop.

  -request_loop. -rql
            specifies that the edit_error_list request loop be
            entered. This is the default.

  -quit
            exits after performing any operations specified by
            control arguments. The default is to enter the

          request loop.

-prompt STR
          changes the prompt for edit_error_list request lines
          to STR. If STR is "", the user is not prompted.

-no_prompt
          stops prompting for edit_error_list requests. The
          default prompt is "edit_error_list(N):", where N is the
          recursion level if greater than one. Equivalent to
          -prompt "".

REQUEST LINE SYNTAX:

   ' A edit_error_list request line beginning with a ".." causes
the rest of the line to be passed to the command processor.

     The semicolon is used to separate multiple requests on a
line.

     There are thirty-three requests to edit_error_list, they are;

               create, add, select,
               change, set_output, set_prompt_on,
               set_prompt_off, set_default_value,
               add_field, print,
               edm, qedx, ted, teco, emacs,
               copy, move, delete, atr,
               set_atr_on, set_atr_off, set_atr_args,
               fill, apply, enter,
               abort, execute,
               help, set_next_entry,
               "?", ".",
               update and quit.

Each edit_error_list request accepts a particular set of
arguments, as described under "REQUESTS" below. In general,
requests operate on an "entry". An entry is a complete lister
record. Since these "Standard" error lists are in reality
lister listin files, any lister command may be used by the
developer to produce customized output. It must be noted,
however, that the edit_error_list command is the only way to
have changes to the error list reflected in the "status.info"
file for the particular area, and have Trouble Report
transactions submitted based upon error list changes without
additional intervention.

REQUESTS:

create {-control_args}, cr {-control_args}
    causes the creation and initialization of an error list.
    This "initialization" is actually the construction of a
    lister file "header" and the setting of certain per error list
    values.

  Acceptable control_args to the create request are:

  -record_delimiter CHAR, -rd CHAR
        sets the error list record delimiter to CHAR. CHAR may be
        chosen from the following set: ! # & % $ * = ? @ ^ ¦ ~
        The default record delimiter is @.

  -field_delimiter CHAR, -fd CHAR
        sets the error list field delimiter to CHAR. The
        record_delimiter and field_delimiter may not be the
        same CHAR. See above for acceptable values for CHAR.
        The default field delimiter is #.

  -field_name fld1 fld2...fldn, -fn fld1 fld2...fldn
        allows specification of error list fields in addition
        to the "standard" predefined fields (see Standard
        Error List Field Descriptions, below). A fieldname
        may not begin with a "-" character. Prompting occurs
        for these fields by default, see the -prompt_off control
        argument below.

  -next_entry_number N
        initializes the internal error list "next" entry
        number to N (1 < N < 99999999). This is the number
        that will be assigned to the entry in the next add
        request. The default is 1.

  -pathname pathname, -pn pathname
        specifies the pathname of the status.info segment to
        be updated when the update request is invoked.
        Pathname may be an absolute or relative path. The
        default pathname is >doc>iis>NAME.status.info.

  -prompt_off fld1 fld2...fldn
        "turns off" prompting for fldi. This control argument
        may be used for all fields defined by the -field_name
        control argument and the "standard" fields.

-set_default fld1 value1 fld2 value2...fldn valuen
        sets the default value for fldi to valuei. This control
        argument may be used to set the default value for any
        fields defined by the -field_name control argument and
        all "standard" fields except numb.

-atr_args "STR"
        sets the arguments supplied to the answer_trouble_report
        command to "STR". STR is passed to atr when MTRS
        transactions are submitted. No validation of these
        arguments is provided by eel.

-auto_atr_off
        turns "off" the automatic submission of MTRS
        transactions. The default is to automatically submit
        MTRS transactions when appropriate.

add {-control_args}
    adds an entry to the error list. The entry number is
    generated automatically from the next_entry_number field.

    Acceptable control arguments to the add request are:

-entered_date DATE, -edt DATE
        sets the entered_date field to DATE (actually
        yyyy-mm-dd). DATE must be acceptable to the
        convert_date_to_binary_ subroutine. The default is
        the current date.

-status VALUE, -st VALUE
        sets the status field to VALUE (See Standard
        Error List Field Descriptions (Table 1), below for
        valid status values and their meanings). The standard
        default is "error".

-status_date DATE, -stdt DATE
        sets the status_date field to DATE (actually
        yyyy-mm-dd). DATE must be acceptable to the
        convert_date_to_binary_ subroutine. The default is
        the current date.

-tr trid1 trid2...tridn
        sets the tr field to "canonicialized" tr identifiers,
        ie. phxnnnnn for all TR ids with the "TR" or "phx"
        prefix, and trids that are all numeric.
        Changes of this entry's status will automatically generate
        appropriate TR system transaction(s) for all phxnnnnn
        numbers, all others are ignored.

-type STR
     sets the type field to STR. Valid values for type are
     "problem", "suggestion", and "limitation". The standard
     default is "problem".

-desc STR
     sets the desc field to STR.

-bypass STR
     sets the bypass field to STR.

-version STR
     sets the version field to STR.

-added_info STR, -ai STR
     supplies the "added_info" field, required by some changes
     of status, to the generated TR system transaction(s).

-field_name fieldname STR, -fn fieldname STR
     sets field "fieldname" to STR. If "fieldname" is not
     defined, an error occurs. This control argument allows
     setting of error list fields in addition to the
     "standard" predefined fields (See Standard Error List
     Field Descriptions, below).
     This control argument may appear more than once.

select "STR", sel "STR", sl "STR"
   allows selection of entries based upon the content of one
   or more fields. The select request, and active request,
   simply prints or returns the entry numbers meeting the
   selection criteria. The STR argument consists of one or more
   field comparisons. A field comparison involves comparing a
   test string to the value of the specified field in current
   record. The field comparison statement always consists of
   three parts:

            "fieldname   comparison_operator   test_string"

       fieldname
          is the name of a field defined in the error list.

       comparison_operator
          specifies what comparison is performed. The opposite
          comparison is performed if the comparison operator is
          preceded by "not".   The comparison operators are:

            contains test string is contained in the field
                      value.   The comparison is made without
                      regard to case, i.e., uppercase letters

                    compare equal to lowercase letters.
          equal   test string is equal to the field value.
                       Uppercase   letters   are   distinct   from
                       lowercase letters with this operator.
          greater   field value is alphabetically greater than
                       the test string (e.g., 0123456789Aa ...
                       Zz).
          less   field value is alphabetically less than the
                       test string.

      test_string
            is the string that is compared to the field value
            string.

   Several field comparisons may be specified by the STR
   argument. Field comparisons are combined by the logical
   operators "and," "or", or "not". In the absence of
   parentheses, the prefix "not" operator is evaluated first,
   then the infix "and" operator, then the infix "or"
   operator. Parentheses may be used to specify the exact
   order of evaluation. These rules are similar to the PL/I
   rules for Boolean expressions.

change {N} {S} {-control_args}, c {N} {S} {-control_args}
   changes the status field of entry number N to S (see
   Standard Error List Field Description, below for valid
   status codes). If N is not supplied, the current entry is
   changed. If S is not supplied, prompting occurs for
   "promptable" fields not supplied by appropriate control
   arguments. This request sets the "current" entry to N.

   Acceptable control_args to the change request are:

   -status_date DATE, -stdt DATE
         Sets the status_date field to DATE (actually
         yyyy-mm-dd). DATE must be acceptable to the
         convert_date_to_binary_ subroutine. The default is
         the current date.

   -tr trid1 trid2...tridn
         sets the tr field to "canonicialized" tr identifiers,
         ie. phxnnnnn for all TR ids with the "TR" or "phx"
         prefix and trids that are all numeric.
         Changes of this entries status will automatically generate
         appropriate TR system transaction(s) for all phxnnnnn
         numbers, all others are ignored.

   -type STR
         sets the type field to STR. Valid values for type are

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"problem", "suggestion", and "limitation". The standard
default is "problem".

-desc STR
        sets the desc field to STR.

-bypass STR
        sets the bypass field to STR.

-version STR
        sets the version field to STR.

-added_info STR, -ai STR
        supplies the "added_info" field, required by some changes
        of status, to the generated TR system transaction(s).

-field_name fieldname STR, -fn fieldname STR
        changes field "fieldname" to STR. If "fieldname" is not
        defined, an error occurs. This control argument allows
        changing of previously defined error list fields in
        addition to the "standard" predefined fields
        (See Standard Error List Field Descriptions, below).
        This control argument may appear more than once.

-enter
        causes the change to be "entered" in the error list.

set_output {-control_args}, so {-control_args}
     specifies the format and content of the print request. If
     control_args are omitted then -format long is used.

Acceptable control_args to the set_output request are:

-format NAME
        uses NAME.listform to control the format and content of
        the output. If NAME does not have a suffix of
        listform, then one is assumed. However, the suffix
        listform must be the last component of the segment. If
        NAME contains a "<" or a ">" then it will be used as the
        pathname of the listform. Otherwise, the error_list
        search list will be used to find NAME. The default
        error_list search list is >doc>iis>error_lists.

-field_name fld1 fld2... fln, -fn fld1 fld2...fldn
        prints only the specified fields, one to a line. Fldi
        must be a defined fieldname in the error list.

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add_field fieldname1 fieldname2...fieldnamen
    defines fieldnamei as a valid field in the error list.
    Prompting occurs for these fields by default, (see
    "Prompting" below).

set_prompt_on fld1 fld2...fldn
    causes fldi to be prompted for if its value is not
    supplied via a control argument. Fldi must have been
    previously "defined".

set_prompt_off fld1 fld2...fldn
    stops prompting for fldi. Fldi must have been previously
    "defined" (see "Prompting" below).

set_default_value fld1 value1 fld2 value2...fldn valuen
    sets the default value for fldi to valuei. This request
    may be used to set the default value for any fields
    "defined" by the -field_name control argument and all
    "standard" fields except numb.

print {N} {-control_args}, pr {N} {-control_args}
    prints the current (default) entry, or entry N if specified.
    If -control_args are omitted, then the current "set_output"
    specification is used to control the output.
    This request sets the "current" entry to N.

Acceptable control_args to the print request are:

  -format NAME
        uses NAME.listform to control the format and content of
        the output. If NAME does not have a suffix of
        listform, then one is assumed. However, the suffix
        listform must be the last component of the segment. If
        NAME contains a "<" or a ">" then it will be used as the
        pathname of the listform. Otherwise, the error_list
        search list will be used to find NAME. The default
        error_list search list is >doc>iis>error_lists.

  -field_name fld1 fld2... fln, -fn fld1 fld2...fldn
        prints only the specified fields, one to a line. Fldi
        must be a defined field_name in the error list.

edm {N}
ted {N}
teco {N}
qedx {N}, qx {N}
emacs {N}
    allows the user to edit an error list entry. If N is
    specified, then entry N is edited. The default is the
    current entry. This request sets the "current" entry to N.

apply {N} COMMAND-LINE, ap {N} COMMAND-LINE
    execute a Multics command line for the specified entry.
    The command line is modified to inlclude the pathname of a
    segment containing the entry. If N is omitted, the current
    entry is used.

enter {-control_args}

    The enter request is used to update the NAME.error_list with
    the additions/changes made thus far. If necessary, generates
    appropriate TR system transaction(s), and optionally exits
    the edit_error_list request loop.

  Acceptable control_args to the enter request are:

   -quit
            exits the edit_error_list request loop after all validation
            and prompting are completed. The default is to return to
            the edit_error_list request loop.

copy {N} NAME, cp {N} NAME
    copies entry N to NAME.error_list. If N is not supplied,
    then the current entry is moved. NAME is an error list name.
    If NAME does not have a suffix of error_list, then one is
    assumed. However, the suffix error_list must be the last
    component of the segment. If NAME contains a "<" or a ">"
    then it will be used as the pathname of the error_list.
    Otherwise, the error_list search list will be used to find
    NAME. The default error_list search list is
    >doc>iis>error_lists.

move {N} NAME, mv {N} NAME
    copies, then deletes, entry N to NAME.error_list. If N
    is not supplied, then the current entry is moved. NAME
    is an error list name. If NAME does not have a suffix of
    error_list, then one is assumed. However, the suffix

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error_list must be the last component of the segment. If
NAME contains a "<" or a ">" then it will be used as the
pathname of the error_list. Otherwise, the error_list
search list will be used to find NAME. The default
error_list search list is >doc>iis>error_lists.

delete {N}, dl {N}
    deletes entry N from the error list. If N is not supplied,
    then the current entry is deleted.

atr {N} {-control_args}
    invokes the answer_trouble_report command for entry number
    N. If N is omitted, then the current entry is used. This
    request uses the the default atr control arguments specified
    by the set_atr_args request or specified by the -atr_args
    control argument in the create request.

  Acceptable control_args to the atr request are:

  -argument "STR", -ag "STR"
            "STR" are control arguments for the answer_trouble_report
            command. STR is appended to the default atr control
            arguments (if any) before the atr command is invoked.
            No argument validation is provided by eel.

set_atr_on
    turns "on" the automatic submission of MTRS transactions.
    This is the default.

set_atr_off
    turns "off" the automatic submission of MTRS transactions.

set_atr_args "STR"
    sets the arguments given to the answer_trouble_report
    command to "STR". No validation of these arguments is
    performed by eel.

fill {N} {-control_args}
    causes filling of the multi-line fields of entry number N.
    If N is omitted, then the current entry is filled.

  Acceptable control_args to the fill request are:

  -line_length n, -ll n
            re-formats the entry according to the filling

algorithim of format_document_ to column n. The
default fill column is 72.

abort {-control_args}
    "aborts" the current entry without validation and related
    activities. The current entry is not added to or modified
    in the error list.

    Acceptable control_args to the abort request are:

    -quit
            exits the edit_error_list request loop. The default is
            to return to the edit_error_list request loop.

    -force, -fc
            forces the exiting of the request loop without query
            if an entry has been modified without being "entered".

execute STR, e STR
    passes the concatenation of STRs with intervening spaces
    to the Multics command processor. This request is
    different from ".." because it is first parsed and
    interpreted as a edit_error_list request line before being
    passed to the command processor.

help {request_name}
    provides information on the various edit_error_list
    requests. If request_name is given, then information on
    that request is provided. If no request_name is given,
    information on edit_error_list is provided.

set_next_entry N
    allows the modification of the "next_entry_number", that
    number given to the next add request, to N (1 $\leq$ N $\leq$
    99999999).

?

    lists the available edit_error_list requests and request line
    syntax.

"."

    edit_error_list identification request.

update {path}
    updates path with the contents of NAME.error_list using
    the current error_list.listform. If path is not specified
    the value specified, or assumed, by the -pathname control
    argument in the create request is used.

quit {-control_args}
    exits the edit_error_list request loop.

Acceptable control_args to the quit request are:

 -force, -fc
    forces the exit of the request loop without query if an
    entry has been modified without being "entered".

PROMPTING:

    The default is to prompt for all defined fields. This
default may be overridden by the set_prompt_off request, or by
the use of the -prompt_off control argument in the create
request. Note that the "added info" required by the MTRS in
some instances is not part of the error list and will be
prompted for when required unless the -added_info control
argument is used to provide it. A "." on a line by itself
terminates the input for multi-line fields.

Field Name	R -> required O -> optional	Description	Validation criteria
numb	R	the entry number (unique to this list) of this error.	(8) 0-9
entered_ date	R	the date (yyyy-mm-dd) this entry was entered	cdtb
status_ date	R	the date (yyyy-mm-dd) of this entries CURRENT status.	cdtb
type	R	type of this entry eg. problem or suggestion	problem suggestion limitation

status	R	the CURRENT status of this entry
		long name short name
		  error er
		  exl exl
		  dev dev
		  limitation li
		  submitted sub
		  accepted a
		  rejected r
		  entered e
			error
			exl
			dev
			limitation
			submitted
			accepted
			rejected
			entered

tr	O	one (or more) TR identifiers identifiers that describe this error. The TR system 'links' 'known' associated TR's.	
desc	R	a description of the error or a scenario that will reliably reproduce the error.	ASCII text
bypass	O	a description of how to fix or bypass the error.	ASCII text
version	O	the version of the software that include the fix for the problem.	

Table 1.
Standard Error List Field Descriptions

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