*R*TIME Server Version 12.1*
New Features

Robert Ammon

SCIENTECH, LLC

August 2004

Alarming

- Alarm processing was modified to so that when a point is acknowledged, the limit deadbands are not applied on the first iteration, so that a point can come out of alarm if its value is less than the alarm limit but has not cleared the alarm limit by the deadband value.

Alarming

- Alarm DI logic was modified for analog points to support a alarm DI defined on multiple points and the results will be if one or more points are in-alarm then the alarm DI is set. If no points are in-alarm the alarm DI is reset. This functionality is similar to the function of doa.

Alarming

- Operator alarms: A fifth alarm block was added to analog points. The contents are NOT defined in the RTDU only via APAD/SPAD. The operator alarms are protected through a dbupdate as long as the binary database files are retained.

Alarm Logging

- Modified to support the ability to print to line type printers.
- Added ability to suppress alarm hard copy printing based upon the value of a digital point.

Alarm Summary

- Added parameter to ALMSUM.INI to set default setting for All Alarms or Unacknowledged Alarms.
- Modified Alarm Response File support to support any file extension instead of just .txt. Also remove case sensitivity in matching point name.

DAS

- Moved the Scan Auxiliary information out of the scan database into the “database name.aux” file and created interface modules to access it.
- Added the “REDUNDT” conversion types to analogs and digitals, modified ASP and DOA to perform redundant points calculations.
- Added “PULSECNT” conversion type for SOE digitals.

DAS

- If the signal range limits are not defined and the alarm validity limits are defined then the alarm validity limits will be used to determine the RANGE_FAILED quality in place of the signal range limits.
- Support for RTP MODBUS and 8455/38 AO cards.
- Modified SOE processing to only create SOE messages based upon the SOE trigger field in the database.

Other

- Point Suppression on point pick lists: On a per data point basis, the security level at which the data point is visible in the point picklist can be defined.
- Point pick list search: Can search using additional database fields

Other

- Systime and the format of systime.ini were simplified. For each database the name of the second (SDZTIME) and millisecond (MSTIME) time points can be specified in the INI file. The millisecond time point is optional.
- Message Logging: The ability to route application log messages to the alarm printer was added.

Startup

- Startrt configuration tabs were simplified. The standard R*TIME processes (calc_process, systime, loadivm (PMAX), message, archctrl, netsrvr, back_monitor, shmatt (PMAX), ldmon_ivm (PMAX), ldmon_sdf (PMAX), afs_log (PMAX), afs (PMAX), avg (PMAX), seq (PMAX), pepsemon (PMAX), lowload (PMAX)) that were previously defined in startrt.ini to startup are now started automatically by Startrt and no longer have to be defined in startrt.ini.

Point Summaries

- Added two new point summaries, All Points (no selection criteria for the report) and Points with Alarm Limits Inactive.
- Added ability to produce reports with All Analog Points only, All Digital Points only, All Points and Selected Points
- Added standalone summary report programs that support the ability to generate printed reports via a single executable.

Periodic Logs

- Added generic Excel based log reports function. Reports can be generated on –demand or scheduled for execution using the Executive Scheduler or Excel Report Generator. Ability to view previously generated reports is also provided. Can be extended for any user defined logs or reports by editing an INI file.

Interpretive Calculation

- FLW - Kewaunee flow compensation
- K_AVG - Average function with Kewaunee quality rules
- WORSTP - Worst point with assoc. quality
- ACCUM_TM - Accumulation of value in minutes, gathered at the minute
- RATE_T - Rate per minute of value over interval
- MIN_TM - Minimum of N best quality points , Minute based interval
- MAX_TM - Maximum of N best quality points , Minute based interval
- AVG_TM - Average of N best quality points , Minute based interval

Interpretive Calculation

- Increased the maximum number of inputs to 24.
- Added automatic failover data files for all transform IC functions.

Other

- Increased the maximum number of shared memory segments on Windows from 50 to 200.
- Site Specific Status Bit in the CVT to identify special data points.
- Added support for data/failover directory. Any files placed in this directory are automatically copied to the Standby server.

Other

- Area / Group Displays:
  - Added ability to control security on an area by area basis.
  - Added ability to print area groups on a periodic basis.
- Digital Display: - updated the digital display function created for LaSalle to make it generic and configurable via an INI file and moved to a standard R*TME function.

Other

- Steam Table HMI: - added a new display and application that provides the ability to access the steam table functions from R*TIME Viewer.
- TDBM changes: Jumping SDZTIME, Function code “Z”. This was added to decrease testing times for large histories, especially when data is only gathered once a minute.

Database Update

- When a point is added while R*TIME is running the point will be off-scan and must be manually placed on-scan. The scan status is not changed as the results of a dbupdate for an existing data point while the system is running.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Reload_db modifications**:
    - -- Added reload_db flag to the following processes/modules to shut them off during database updates:
      1. calc_process module
      2. Alarm summary
      3. Proc_monitor
      4. clnt_srvr

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Database update modifications**:
    - Modified dbupdate to process point deletions differently. Instead of actually deleting points they are renamed to AI_CALC_Z + point ID for analogs and DI_CALC_Z + point ID thus producing a unique name. The point description is changed to “Deleted Point”. R*TIME filters all points with a prefix of “AI_CALC_” and “DI_CALC_” from pick lists and reports therefore points with these prefixes will be invisible to the operator. These “deleted” points are available for reuse by specifying another point name for a point ID.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Database loading modifications**:
    - Inserting points within holes in the point ID allocation range, were corrected in node_monitor

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Alarm_List shared memory size modification**:
    - One of the problems occurs when points are deleted, added and one redundant server is restarted. This scenario produces a mismatch in Alarm_List size between the two servers that is only resolvable by restarting both servers.
    - To correct this problem, the initial size of Alarm_List shared memory along the warm start file is set at 1000 over the number of analogs and 1000 over the number of digitals. This sizing allows for 500 analog and digitals to be added to the system without taking R*TIME down on either server.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Alarm_List shared memory size modification (cont.)**:
    - In startrt, the logic reads the size of the warm start file and compares the size the actual number of analogs and digitals. If 500 spares are present for analogs and digitals, the size of Alarm_List remains the same and the redundant server is in sync. If not, the Alarm_List is initializes to the new size and all points are re-alarmed. When this occurs messages will be written by clnt_srvr in the system message file to indicate the problem and possible solution. The solution is to stop R*TIME on the redundant server and copy alrm_wrm.db_name file in ~/unit/bku/local from the new active server and restart R*TIME.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Alarm_List shared memory size modification (cont.)**:
    - Following database updates with one server down, it is advisable to copy the alrm_wrm.db_name file from the online server before starting the offline redundant server.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Modified R*TIME Applications**:
    - -- alrm_shm
    - -- arch_rec
    - -- calc_process
    - -- clnt_srvr
    - -- dbupdate
    - -- calc_process
    - -- startrt
    - -- node_monitor
    - -- summary

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Required Site Specific Application Modifications**:
    - -- Check reload_db flag and don't access the CVT/WCVT if it is set

Version 12.0 New Features

- UNICODE support was added for point description, units, and tags database fields. APIs were added to support Unicode. The message files are Unicode.

Version 12.0 New Features

- PDF format support was added for the alarm message files and the point summary reports. PDF is needed for any file that contains Unicode characters.
- A PDF file generation library was added as an R*TIME library to support PDF output file generation by applications.

Version 12.0 New Features

- A millisecond time data point MSTIME was added. MSTIME contains the number of milliseconds since midnight of the current day.
- Archive support for shared disk system between redundant servers. The STANDBY server will not write archive data to the shared disk system.

Version 12.0 New Features

- Calc_process was modified to process alarms faster that once per second. Set in calc_process.ini. Analog point “MSTIME” is now a required system point. Contains number of milliseconds since midnight. MSTIME is updated by systime. MSTIME is stored into ALMTIME to trigger alarming on the STANDBY server.
- Clnt_srvr was modified to support alarms faster than once per second on multiple databases.

Version 12.0 New Features

- Message Files: Alarm and SOE message were modified to have one file per database.
- Millisecond Archive Resolution: Five milliseconds is the minimum archive resolution for PPCs. This is tunable in edarcdef.ini for hardware limitations which changes the pick list selection in edarcdef.

Version 12.0 New Features

- DAS Modifications:
  - A. RTP2x00 support for thirty-two DASes. Support for sixteen chassis per DAS node was added to support the RTP 2300.
  - B. Added support for RTP2X00 internal points (float or state variables) as inputs or outputs. These points are viewable on Hardware Addressing chassis display, via the View RTP Points button.
  - C. Millisecond data acquisition: Twenty milliseconds is the practical limit. Set in param.txt per DAS(node).

Version 12.0 New Features

- DAS modifications:
  - A. Changed the format of the “database name.scn” file from ASCII to binary and move the scan database into the point database structure in memory.
  - B. If the signal range limits are not defined and the alarm validity limits are defined then the alarm validity limits will be used to determine the RANGE_FAILED quality in place of the signal range limits.
  - C. Added the ability to specify the scan rate on a per node basis in PARAM.TXT.

Version 12.0 New Features

- Point Name Alias: The ability to support point alias names was added. An alternate point name can be defined in the database and referenced by any server based function as an alternate name for the point.
- Steam Table Functions: Added the ability to perform calculations using either English or SI units.
- Added separate Server Type from Server Mode to support redundant Simulator and PSS systems.

Version 12.0 New Features

- eDNA Historian Interface: - the ability to record data to an eDNA historian and retrieve data from eDNA for display on R*TIME Viewer was added.
- OPC Client and Server: the OPC client and server developed for PMAX was made a standard R*TIME component. The ability to support digital points was added.

Version 12.0 New Features

- PI Historian Interface: the PI interface developed for LaSalle was made generic and added as a standard R*TIME function. The interface was updated to updated to make it completely configurable from INI files.

- PSS to PPC Interface: the PPC to PSS interface developed for SONGS that is socket based and connected from the PPC to the PSS was included in the standard R*TIME. Both styles of PPC to PSS interfaces (PPC acting as a server and PPC acting as a client) are now supported by R*TIME.

Version 12.0 New Features

- Resource Monitor: the ability to monitor server resource utilization and compute hourly and daily average values is provided for CPU utilization, disk utilization and memory utilization (network utilization will be added as a future capability). The instantaneous, hourly and daily utilization values can be recorded to data points for archival and display.

Version 12.0 New Features

- Equipment Monitoring:
- For monitored plant components, this module calculates and accumulates:
  - Imports archived data
  - Resets accumulations for user specified components
  - Generates summary and detailed reports over user specified time intervals

Version 12.0 New Features

- Notification Monitoring:
- Provides capability to define an event based on user defined criteria
- Monitor Events
  - Send the following types of notification:
    - Page
    - Email
    - Display Activation
- Log event notifications

Version 12.0 New Features

- Excel Report Generator:
- Standalone version of the Excel Report Generator created for PMAX
- Can be used from applications or from the Executive Scheduler

Version 12.0 New Features

- TDBM Test Case File Upload
- Wintag
  - Windows based application that provides a superset of the command line ADTAG program has been added to R*TIME as a standard component. Wintag provides all of the functions available in ADTAG, mdb_drv and various other administration programs:
  - The program can be either local VSUPPORT or RPC based allowing it to run on a remote computer (subject to the R*TIME RPC Interface security limitations). (Currently not supported for R*TIME V 12.1 until RPC issues affected by the changed to Visual Studio .NET are resolved.

Version 12.1 Upgrade Issues

- **Database Changes**
  - Version 3.1 of the R*TIME Database Utility includes a built in database converter for converting previous version databases to Version 12.1 format.
- **Message File Format Changes**
  - A message file converter has not been developed. This first upgrade project to R*TIME Server Version 12.1 will require a message file converter utility be developed.

Version 12.1 Upgrade Issues

- **Archive File Format Changes**
  - An archive file converter has not been developed. This first upgrade project to R*TIME Server Version 12.1 will require an archive file converter utility be developed.

Version 12.1 Upgrade Issues

- **INI File Format Changes**
  - SYSTIME.INI - will have to be manually converted to the new parameter format for all upgrades to R*TIME Server Version 12.1.
  - PARAM.TXT – PERIOD parameter to define DAS node scanning frequency
  - AREASECURITY.INI – will have to be manually created for all upgrades to R*TIME Server Version 12.1
  - PROC_MONITOR.INI – format changed to Windows INI style format.