

A

Accounting

- base record, 56
- billing unit (SBU)
 - and CSA setup, 12
- boot log, 70
- checking file size, 13
- connect time SBUs, 45
- Cray system (CSA)
 - allowing non-super users to execute, 54
 - commands, 26
 - converting from UNIX accounting, 83
 - daily operation overview, 10
 - data processing, 29
 - description, 3
 - file structure, 5
 - location of configurable parameters, 28
 - reports, 10
 - setting up, 11
 - tailoring, 39
 - tailoring commands and shell scripts, 53
- cron
 - command, 12
 - log, 71
- csainfo file, 10
- csarun command
 - executing, 53
 - restarting, 19
- daemon, 11, 12, 51
- daily, 4
- data consolidation, 97
- device, 65
 - acct.h header file, 68
 - categories, 65
 - configuration, 67
 - description, 65
 - devacct command, 68
 - implications, 69

- param.h header file, 67
- SBUs, 47
 - system header files, 67
- dodisk command, 11
- dump log, 71
- editing data files, 20
- end-of-job record, 59
- error log, 74
- fee file, 11
- files, 94
- fixing corrupted files, 88
- front-end formatting, 97
- log files, 70, 76
- memory integrals, 62
- message log, 76
- MPP record, 61
- multilevel security (MLS) log, 75
- multiple / and /usr file systems, 70
- multitasking
 - incentives, 62
 - SBUs, 43
- Network Queuing System (NQS)
 - description, 51, 52
 - enabling, 12
 - log, 78
 - SBUs, 45
- new user log, 72
- OLDsu log, 73
- pacct
 - file, 56
 - SBUs, 41
- per-process
 - data, 56
- periodic, 4, 13
- process, 10
- SDS SBUs, 43
- session data, 4
- shutdown, 11

- socket, 12, 46, 51, 65
- standard UNIX
 - automating, 82
 - command summaries, 93
 - converting to CSA, 83
 - daily operation, 81
 - daily report, 91
 - daily usage report, 91
 - description, 79
 - fd2log, 85
 - files and directories, 80
 - holidays, updating, 90
 - last login report, 94
 - reports, 90
 - runacct command, 84, 87, 88
 - setting up, 82
- su log, 72
- system
 - activity log, 76
 - logs, 73
- system billing unit (SBU), 40
 - connect time, 45
 - device, 47
 - MPP, 44
 - multitasking, 43
 - NQS, 45
 - pacct, 41
 - SDS, 43
 - tape subsystem, 46
- tacct errors, 89
- tailoring, 53
 - CSA shell scripts, 53
- UNICOS tape subsystem
 - description, 51
 - enabling, 12
 - SBU, 46
- unprocessed files, 7
- user disk space, 11
 - /usr/adm/acct/day files, 7
 - /usr/adm/acct/work files, 8
- verifying data files, 20, 21
- wtmp errors, 89
- Accounting front-end formatting
 - CSA, 99
 - generic, 99
 - Accounts
 - and fair-share scheduler, 205, 209, 210
 - number of files used, 239
 - system entries in user database (UDB), 196, 205, 207, 209, 210
 - acct.h header file, 68
 - ACCT_FS
 - setting free blocks, 53
 - ACCT_FS file system, 53
 - aggregate quotas, 263
 - AIR, see Automated incident reporting (AIR), 137
 - aird daemon
 - binary log file, 143
 - record types, 174
 - initiation, 139
 - airdchk shell script
 - description, 139
 - example crontab entry, 139
 - location, 139
 - airdet command, 174–176
 - description, 139
 - airexist command
 - process verification, 161
 - airprconf command, 174–176
 - description, 139
 - airsum command, 174, 176, 180
 - description, 139
 - airtsum command, 174, 175, 178
 - description, 139
 - Algorithm
 - oversubscription, 265
 - quota evaluation, 243
 - Asynchronous I/O, 288
 - Automated incident reporting (AIR)
 - adding
 - data migration (example), 166
 - monitoring functions, 166
 - products, 165
 - aird log file
 - record types, 174

- availability
 - data, 174
 - definition, 174
 - commands, 139
 - components, 137
 - configuration
 - file, 137
 - function, 171
 - keywords, 141, 143, 144
 - language, 140
 - new functions, 169
 - sample file, 150
 - tags, 144
 - validation, 173
 - configuration file
 - contents, 140
 - installation tool, 138
 - tuning, 159
 - validation, 159
 - coordinator daemon
 - description, 138
 - existence test
 - kernel, 164
 - NQS, 162
 - tape subsystem, 163
 - TCP/IP, 162
 - URM, 165
 - functional test
 - NQS, 163
 - tape subsystem, 164
 - URM, 165
 - functions
 - execution rates, 160
 - initiation, 139
 - integrating new functions, 168
 - integrity checking
 - kernel, 164
 - monitoring functions
 - description, 138
 - products, 160
 - types, 160
 - use of, 160
 - new functions
 - adding, 166
 - configuring, 169
 - integrating, 168
 - overview, 137
 - product testing
 - NQS, 162
 - tape subsystem, 163
 - TCP/IP, 161
 - URM, 164
 - report generator, 174
 - description, 138
 - response test
 - NQS, 163
 - tape subsystem, 164
 - URM, 165
 - return tags, 143
 - shell scripts, 139
 - TCP/IP existence tests, 162
- B**
- Basic
 - operational keywords (AIR), 142
 - batch
 - queue
 - availability and AIR, 163
 - Batch systems
 - fair-share scheduler, 234
 - response time, 231
 - batch systems
 - and URM, 372, 405, 406, 408, 411, 414, 415, 418–420
 - Binary
 - log file (AIR), 143
 - bread device activity counter, 285
 - bwrite device activity counter, 285

C

- Cache, see Logical device cache, 288
- canch device activity counter, 287
- cat command
 - AIR existence test, 164
- cd command
 - AIR existence test, 164
- chargefee command, 11
- checkpointing
 - and URM, 396, 418
- ckdacct shell script, 13
- ckpacct shell script, 13
- Click
 - fair-share scheduler cost, 227
- clists, 287
- Command summary reports (accounting), 93
- Commands
 - AIR, 139
 - Cray system accounting (CSA), 26
- CONFIG configuration keyword (AIR), 141
- config.h file, 240
- config.mh file, 240
- Configuration
 - AIR file, 137, 140
 - tuning and validation, 159
 - AIR file language, 140
 - AIR sample file, 150
 - Cray system accounting (CSA) parameters, 28
 - file
 - system quotas, 241
 - keywords (AIR), 141, 144
 - tags (AIR), 144
 - validation for AIR, 173
- Configuration and installation menus
 - file system quotas, 240, 241
- Conversion
 - from standard UNIX to CSA, 83
- COORD_BLOG configuration keyword (AIR), 143
- COORD_DEBUG configuration keyword (AIR), 143
- COORD_HBEAT configuration keyword (AIR), 142
- COORD_LOG configuration keyword (AIR), 142
- COORD_LOGLEV
 - configuration keyword (AIR), 143
- COORD_LOGLEV configuration keyword (AIR), 142
- COORD_TESTDIR configuration keyword (AIR), 142
- Coordinator daemon (AIR)
 - description, 138
- Counters, device activity, 285–288
- CPU
 - activity, 285
 - performance, 285
 - quota feature, 237
 - scheduling
 - and fair-share scheduler, 228
 - see also Fair-share scheduler, 191
 - tick, fair-share cost, 227
 - usage
 - and URM, 417
 - usage and fair-share scheduler, 192
- Cray Research system activity monitor (sam)
 - description, 295
- Cray system accounting (CSA), see Accounting, Cray system (CSA), 3
- cron
 - command, 12, 13
 - log, 71
- cron and URM, 376
- cron command, 292
- crontab file, 292
- csa.archive1 user exit, 27
- csa.archive2 user exit, 27
- csa.fef user exit, 27
- csa.user user exit, 27
- csaaddc shell script, 26
- csaboosts command, 5, 10
- csabuild command, 26
- csacon command, 26
- csaconvert command, 26
- csacrep command, 26
- csadrep command, 26

csaedit command, 21, 26
 csafef command, 26
 csafef2 command, 26
 csagfef command, 99
 built-in functions, 126
 example, 132
 csagfef command language, 123
 csagfef command language built-in variables, 131
 csagfef command language operators, 124
 csagfef command language statements, 123
 csagfef command awk language, 123
 csagfef command source scripts, 123
 csagfef language description, 123
 csaibm command, 27
 csainfo file, 10
 csajrep command, 27
 csaline command, 27
 csam utility, 295, 296
 commands, 298
 description, 298
 record/replay function, 299
 csanqs command, 27
 csapacct command, 21, 27
 csaperiod command, 27
 csaperiod shell script
 tailoring, 53
 csaperm command, 27
 csarecy command, 27
 csarun command, 4, 5, 16, 27
 tailoring, 53
 csaswitch command, 27
 csaverify command, 21, 27

D

Daemon accounting, 11, 12, 51
 Daemons
 file system monitor, 270
 interface, 269
 monitor, 269
 networking
 existence tests (AIR), 161

daemons file, 212, 229
 daemons shell script
 AIR initiation, 139
 Daily
 accounting
 operation, 10
 report, 91
 usage report (accounting), 91
 Data collection
 CPU, 321
 disk, 328
 I/O caching, 325
 IPC activity, 332
 memory management, 323
 network interface activity, 331
 NFS activity, 330
 process management, 322
 restricted, 332
 sdc, 320
 sdc example, 346
 system activity, 320
 system calls, 322
 system data (general), 326
 system I/O, 324
 system table management, 324
 tape, 329
 TCP/IP, 330
 terminal activity, 330
 tsar example, 346
 Data migration
 monitoring with AIR (example), 166
 data migration
 and quotas, 241
 datlock device activity counter, 288
 dd command
 AIR function monitoring, 164
 Decay factor in process scheduling, 192, 197
 devacct command, 68
 Device
 accounting, 65
 activity counters, 285–288
 status tables, 284

- dirblk device activity counter, 286
- Directives
 - file system quotas, 250
- Directories
 - Cray system accounting (CSA), 5, 23
 - standard UNIX accounting, 80
- Disk
 - I/O monitoring, 287
 - monitoring, 351
- Disk usage
 - site-configurable reports, 55
- Disks
 - and fair-share scheduler, 227, 236
 - I/O, 227, 236
- diskusg command, 351
- Displays
 - file system monitor status, 275
- dli exchange, 289
- dmparams.h file, 282
- dodisk command, 11
- Domain
 - quotas, 263
- du(1) command, 351
- Dump log, 71

E

- ENDCONFIG configuration keyword (AIR), 141
- Environment variables
 - AIR, 140
- err exchange, 288
- errfile file, 74
- Error
 - log (accounting), 74
 - /etc/config directory, 28
 - /etc/config/daemons file, 212, 229
- Exchanges, user-initiated, 288
- exec system call, 272, 286
- Execution rates
 - AIR functions, 159
- Existence
 - tests (AIR), 423

- Existence functions (AIR)
 - description, 161
- Exponential oversubscription algorithm, 265

F

- FAILED configuration tag (AIR), 144
- Fair-share scheduler
 - accounts, 196, 205, 209, 210
 - activating, 212, 215
 - allocation of shares, 191, 193, 195, 205, 207, 211
 - components, 194
 - cost factors, 227, 228
 - decay factors, 192, 197, 213, 218, 229, 234
 - disabling, 217
 - displays, 193, 197, 219, 221, 222
 - /etc/config/daemons file, 212, 229
 - features, 191, 192
 - flags, 195, 213, 214, 217, 231
 - fragmentation, 236
 - hierarchy, 193, 194, 198, 200, 203, 210, 212, 215
 - I/O resources, 236
 - interactive response, 227
 - limits system call, 192
 - lnodes, 193, 197, 201
 - load levels, 191
 - machine shares, 197, 199, 200, 214, 222
 - memory scheduling, 236
 - monitor information, 219, 221, 222
 - nice values, 229
 - policy system call, 192
 - process scheduling, 201
 - recommendations
 - avoiding fragmentation, 236
 - batch systems, 231, 234
 - decay rates, 234
 - delta factor, 234
 - interactive systems, 231, 234
 - limiting marooning, 231
 - mingshare factor, 231
 - sharemin factor, 232

- resource costs, 227, 228
- resource groups, 194, 196, 203, 210, 211
 - resource group administrators, 216
- scheduling factors, 192, 197, 213, 218, 227
- setting flags, 213
- Share by Account mode, 193, 195, 199, 211, 213, 215
- Share by User mode, 193, 203, 207, 211, 214, 215
- share control values, 197
- share normalizing, 199, 200
- shares, 191, 195, 200, 207
- shradm command, 227–229, 231, 232, 234
- shrdist.auth file, 216
- shrsync command, 237
- system UDB entries, 209
- tuning issues, 227
- udbgen command, 237
- usage history, 193, 195, 218
- user database (UDB), 194, 195, 205, 209, 237
- user information, 192
- fair-share scheduler
 - and URM, 390, 407
 - share entitlement weight in URM, 391
 - share priority weight in URM, 390
 - usage weight in URM, 391
- Fd.fd12 file, 272
- Fd.log file, 282
- fd2log log, 85
- File
 - AIR configuration, 137, 140
 - configuration (AIR), 137, 140
 - delineation keywords (AIR), 141
 - format
 - system activity data, 289, 333
 - system activity data
 - format, 289, 333
 - tables, 288
- File system quotas
 - absolute file name, 242
 - activation, 250
 - adding users, 258
 - administering quota enforcement, 252
 - aggregate quotas, 241, 263
 - algorithm comparison, 267
 - algorithms, 265
 - alternative configuration, 262
 - automatic reporting, 261
 - changing
 - defaults, 245
 - ID class control, 268
 - configuration, 241
 - configuring, 240
 - NQUOTA, 240
 - control
 - source file, 244
 - viewing, 259
 - control files, 239, 241, 242
 - changing values, 247
 - file system groups, 263
 - generating, 248
 - nonresident, 262
 - setting specific quotas, 246
 - control source file
 - creating, 244
 - qudu method, 245
 - creating
 - and extending files, 259
 - directives, 248
 - data migration, 241
 - defaults, 243
 - deleting users, 259
 - description, 239
 - domains, 263
 - enabling, 240
 - enforcement, 249
 - across a network, 268
 - control, 258
 - options, 243
 - file
 - size, 245
 - usage, 251
 - groups, 263
 - infinite quotas, 246
 - inode

- count, 245
 - usage, 251
- manual source file creation, 248
- oversubscription, 243, 264
- quota control groups, 242
- relative file name, 242
- setting
 - defaults, 246
 - specific quotas, 248
- skeleton directive file, 248
- special users, 243, 246
- system startup, 252
- tuning configuration, 260
- usage
 - accumulation rules, 251
 - classes, 245
 - information, 251
 - user-level behavior, 261
 - viewing quota control, 259
- File systems
 - control, 243
 - log file, 278
 - monitoring, 271
- File systems monitor
 - command processing, 272
 - daemon, 270
 - installation, 280
 - log file, 282
 - messages, informative and error, 279
 - operation, 280
 - request processing, 273
 - space monitoring, 269
 - status display, 275
 - status flags, 276
- Files
 - accounting log, 70
 - config.h, 240
 - config.mh, 240
 - controlling use, 239
 - Cray system accounting (CSA), 5, 23
 - editing accounting data, 20
 - fair-share scheduler configuration, 212, 229
 - fstab, 241, 263
 - holidays file (accounting) updating, 14
 - moving, 240
 - quota control, 239
 - standard UNIX accounting, 94
 - tmp_1, 243
 - tmp_2, 243
 - tmp_3, 243
 - unprocessed accounting, 7
 - user database (UDB) default entries, 210
 - verifying accounting data, 20, 21
- filesystem directive, 250
- find command, 352
- FMAILLIST variable, 53
- fork system call, 270, 286
- fpi exchange, 289
- Fragmentation
 - and fair-share scheduler, 236
- Free space
 - monitoring, 269
 - threshold
 - critical, 269
 - warning, 269
- Front-end formatting
 - accounting data, 97
 - csagcon data file format, 120
 - csagcon utility, 99
 - csagfef language description, 123
 - csagfef source scripts, 121
 - csagfef utility, 99
 - data consolidation, 100
 - data variables, 100
 - generic, 99
 - example, 132
- Fs prefix, 282
- fsck command, 251
- fsdaemon command, 269, 270
 - processing, 272
 - test mode, 272
 - testing, 282
- fsmon command, 269
- fstab file, 241, 263
- Function

- automated incident reporting (AIR)
 - configuration, 171
 - monitoring (AIR)
 - dd command, 164
 - tpmnt command, 164
 - Functional invocation test (AIR)
 - TCP/IP, 162
 - Functional routines (AIR)
 - description, 161
 - Functional tests (AIR), 423
- G**
- gated daemon
 - AIR existence test, 162
 - functional test, 423
 - Gateway
 - routing
 - daemon, 161
 - Generic
 - quota information, 259
 - getconfig command, 27
 - getinfo system call, 262
 - Group
 - permissions, 282
 - group scheduling control in URM, 408, 419
- H**
- Heartbeat record (AIR), 142
 - Hierarchical shares, see Fair-share scheduler
 - hierarchy, 193
 - holidays file (accounting) updating, 14
- I**
- I/O
 - activities, 287
 - and fair-share scheduler, 227, 236
 - asynchronous, 288
 - caching
 - data collection, 325
 - cost for disk I/O, 227
 - cost for read/write, 228
 - disk, monitoring, 287
 - tape, monitoring, 287
 - I/O caching
 - data collection, 325
 - ID class control, 268
 - Idle account in user database (UDB), 196, 209
 - Idle time
 - and fair-share scheduler (MAXUSAGE parameter), 228
 - iget device activity counter, 286
 - inetd daemon
 - AIR existence test, 162
 - Inode tables, 288
 - Install tool, see UNICOS installation menu system, 142
 - installation and configuration menus
 - Configure System ->URM configuration ->
 - Machine target values, 402-404
 - URM control settings, 406, 408, 410, 415, 421
 - URM machine load evaluation rates, 414
 - Weighting factors for the selector, 418
 - Installation tool, see UNICOS installation menu system, 142
 - Interactive systems
 - fair-share scheduler, 234
 - response time, 227, 231
 - interactive systems
 - and URM, 402, 407, 414, 420, 421
 - Internet
 - domain name
 - server, 161
 - services
 - daemon, 161
 - Internet Control Message Protocol (ICMP)
 - AIR functional test, 162
 - Internet Transmission Control Protocol (TCP)
 - AIR functional test, 162
 - Internet User Datagram Protocol (UDP)

- AIR functional test, 162
- Interprocess communication, 270
- IPC
 - activity monitoring, 332

J

- jobs
 - ranking in URM, 406, 408, 415

K

- Kernel
 - AIR
 - existence test, 164
 - integrity checking, 164
 - product testing, 164

L

- Last login report, 94
- limits system call, 192
- Line printer
 - daemon, 161
- Linear oversubscription algorithm, 266
- listio system call, 288
- Lnodes (limits nodes), 192, 193, 197, 201
- Load levels and fair-share scheduler, 191
- Log
 - binary file for AIR, 143
- Log file
 - file system, 278
- Logical device cache (ldcache)
 - activity, 288
- lpd daemon
 - AIR existence test, 162
 - functional test, 423
- lread device activity counter, 285
- ls command
 - AIR existence test, 164

- lwrite device activity counter, 285

M

Machine

- shares and fair-share scheduler, 197, 199, 200, 214, 222
- /machine/default values, 421, 414
- /machine/jobmax values, 414, 415, 418–420
- /machine/load values, 410, 414
- /machine/rate values, 414
- /machine/target values, 401
- group_sched, 408
- jobcount, 405
- jobs_in_sg, 409
- memory_os, 402, 403
- pick_in_sg, 409, 419
- rec_in_sg, 409
- sds_os, 404

Mail

- daemon, 161
- list for accounting errors, 53
- MAXUSAGE fair-share scheduler factor, 228
- maxushare fair-share scheduler factor, 231

Memory

- integrals for accounting, 62
- Memory click, see click, 227
- memory load in URM, 402, 413
- Memory scheduling
 - and fair-share scheduler, 236

Message

- accounting log, 76
- MESSAGE configuration keyword (AIR), 144, 150

Messages

- daemon
 - existence test, 423
 - response test, 423
- file system monitor, 279
- operator, 270
- mingshare fair-share scheduler factor, 231
- minimum rank in URM, 376, 418

-
- Monitor
 - daemon, 269, 270
 - Monitored products (AIR), 144
 - Monitoring
 - file system, 271
 - file system space, 269
 - free space, 269
 - functions (AIR), 138, 160
 - performance, 283
 - system activity, 283
 - MPP
 - accounting record, 61
 - system billing units (SBUs), 44
 - mppview command, 284, 290
 - msg.h file, 270
 - msgd daemon
 - existence test, 423
 - response test, 423
 - msgd.exist AIR test, 423
 - msgd.response AIR test, 423
 - msgdaemon command, 269
 - Multilevel security feature (MLS)
 - accounting log, 75
 - Multitasking
 - accounting incentives for, 62
 - mvfiles shell script
 - description, 139
 - example crontab entry, 139
 - location, 139

 - N**
 - named daemon
 - AIR existence test, 162
 - functional test, 423
 - namei device activity counter, 286
 - nawk
 - tsar scripts, 320, 335
 - description, 337
 - nawk csagfef scripts description, 123
 - netdaemon
 - AIR existence test, 163
 - Network
 - quota enforcement, 268
 - Network interface
 - activity monitoring, 331
 - Network Queuing System (NQS)
 - accounting
 - charge for jobs, 52
 - enabling, 12
 - daemon
 - existence test, 423
 - response test, 423
 - functional test, 423
 - log, 78
 - networking
 - existence test, 423
 - requests and recycled data, 38
 - system billing units (SBUs), 46
 - Network queuing system (NQS)
 - AIR existence test, 162
 - AIR functional test, 163
 - AIR product testing, 162
 - AIR response test, 163
 - automated incident reporting (AIR), 137
 - New user log, 72
 - newacct command, 193, 199, 201, 203, 211
 - NFS
 - activity monitoring, 330
 - Nice value, 271
 - Nice values
 - and process scheduling, 197, 218
 - Nice values and fair-share scheduler, 229
 - Nonprime time system billing units (SBUs), 41
 - NQS
 - and fair-share scheduler, 192
 - and URM, 372, 389, 417
 - disabling URM control, 389
 - enabling URM control, 372
 - interqueue priority and URM, 417
 - nqs.exist AIR test, 163, 423
 - nqs.funct AIR test, 423
 - nqs.response AIR test, 423
 - nqsdaemon

- AIR existence test, 163
- nqsnet.exist AIR test, 163, 423
- NSESS parameter, 405, 418
- ntpd daemon
 - AIR existence test, 162
 - functional test, 423

O

- OIR configuration tag (AIR), 144
- OLDsu log, 73
- Online tapes (AIR), 137
- Operational keywords (AIR), 142
- Operator
 - interface, 269
 - messages, 270
- Operator workstation
 - Cray Research system activity monitor, sam, 296
 - sam (system activity monitor), 296
- .operrc file, 269
- ore exchange, 289
- outch device activity counter, 287
- Oversubscription
 - algorithm comparison, 267
 - mechanism, 264

P

- pacct file, 56
- param.h header file, 67
- PASSED configuration tag (AIR), 144
- Performance
 - monitoring, 283
- Performance impact
 - fair-share scheduler
 - decay rates, 234
 - disk fragmentation, 236
 - MAXUSAGE factor, 228
 - nice values, 229
- performance problems

- swapping, 403, 404
- Permissions, 282
- pthread device activity counter, 285
- phwrite device activity counter, 285
- pkbad device activity counter, 288
- pkout device activity counter, 288
- plock state, 271
- policy system call, 192
- pre exchange, 289
- Prime time system billing units (SBUs), 41
- Priority, nice value, 271
- Process
 - accounting, 10
 - management
 - activity monitoring, 322
 - tables, 288
- Processes
 - scheduling, 201
- Processor working storage (pws)
 - CPU activity monitoring, 285
- PROD_AVAILABLE configuration tag (AIR), 144
- PROD_UNAVAILABLE configuration tag (AIR), 144
- PROD_WARNING configuration tag (AIR), 144
- Product testing coverage (AIR), 160
- Product verification processes (AIR), 138
- punlock device activity counter, 288
- pws, see Processor working storage, 285

Q

- qmgr command, 372, 389
- quadmin command
 - activating quota enforcement, 249
 - creating quota file, 244
 - current usage information, 251
 - display, 259
- qudu command, 243, 263
- quota command, 261
- quota70 directory, 242
- quotamon command, 261

Quotas, see File system quotas, 239

R

Rates

execution, changing (AIR), 160
 rawch device activity counter, 287
 rc shell script, 269, 292
 rcvint device activity counter, 287
 read system call, 286, 287
 read/write permissions, 282
 reada system call, 288
 readch device activity counter, 287

Recycled data, 4, 33

deleting, 34, 36
 NQS requests, 38

Reports

daily, 291
 generation
 daily, system activity, 291
 generator (AIR)
 description, 138
 system activity, 291

Reset file system monitor, 272

Resource

control
 and user database (UDB), 194, 195
 Fair-share scheduler, 191
 groups
 accounts in user database (UDB), 196
 and fair-share hierarchy, 194, 196, 203,
 210, 211

Response

tests (AIR), 423

Response functions (AIR)

description, 161

RETURN configuration keyword (AIR), 144, 150

Return tags

AIR, 149

rmgr command, 355, 393, 401

batch job selection criteria, 415
 controlling interactive sessions, 421

disabling log files, 374
 enabling group scheduling control, 409
 interactive job count, 420
 machine target values, 401
 main loop delay, 406
 memory oversubscription target, 403
 resource loads, 411
 SDS information, 408
 smoothing factors, 413
 /urm/share_to_go value, 407
 use with AIR, 165
 viewing all users, 375
 viewing job list, 375
 viewing machine load, 375
 viewing user activity, 376
 runacct command, 84, 87, 88, 90
 runocc device activity counter, 286
 runque device activity counter, 286

S

sa.h file, 289, 293
 sa1 command, 284
 sa1.sh shell, 294
 sa2 command, 284
 sa2.sh shell, 294
 sadc command, 284, 289
 sadc data collection program, see sar
 command, 285
 sadc.c program, 293
 sag command, 283, 290
 saga.c program, 293
 sagb.c program, 293
 saghdr.h file, 293
 sam command, 295
 description, 296
 samdaemon daemon, 295
 description, 297
 samdaemon.val validation file, 297
 sar command, 284, 288, 289
 sadc data collection program, 289

- system activity information, displaying, 289
- sar.c program, 293
- SBU, see System, billing unit, 12
- Scheduling
 - cycle, 197
- sdcc command, 318
 - data collection, 320
 - data types, 319
 - description, 319
 - difference from sdcx, 343
 - limitations, 349
- sdcc executable, 319
 - difference from sdc, 343
- SDS
 - and URM, 367, 404, 408, 418
 - preemption by URM, 407
 - residency and URM, 367
 - sdsmgr program in URM, 407
 - URM management, 393
- sdsmgr program, 393
- sdsmgr program in URM, 407
- security parameters
 - Unified Resource Manager (URM), 359
- SEND_MAIL configuration tag (AIR), 144
- sendmail daemon
 - AIR existence test, 162
 - functional test, 423
- sessions
 - control by URM, 418, 419
 - NSESS parameter, 405, 418
 - URM maximum session target, 405
 - URM session initiators, 411, 414, 415, 418, 420
- Share by Account mode, see Fair-share scheduler, 193
- Share by User mode, see Fair-share scheduler, 193
- Share, see Fair-share scheduler, 191
- sharemin fair-share scheduler factor, 232
- Shell scripts
 - AIR, 139
- Shells, 270, 272, 294
- shradm command, 193, 198, 211–213, 215, 217, 218
 - cost factors, 227, 228
 - delta factor, 234
 - examples, 234
 - interactive response, 231
 - limiting marooning, 231
 - MAXUSAGE factor, 228
 - maxushare factor, 231
 - mingshare factor, 231
 - priority decay factor, 229
 - sharemin factor, 232
 - usage decay factor, 234
- shrdaemon command, 198, 213
- shrinfo command
 - displaying priority decay rates, 229
- shrmon command, 193, 197, 221
- shrsync command, 237
- shrtree command, 193, 197, 222
- shrview command, 193, 197, 198, 219
- shuffle device activity counter, 288
- SIGINFO signal, 262
- Simple Network Management Protocol (SNMP)
 - daemon, 162
- smoothing function in URM, 410, 412, 413
- snmpd daemon
 - AIR existence test, 162
 - functional test, 423
- Soft quota option, 264
- Source scripts
 - tsar, 335, 337
- Source scripts csagfef, 123
- Space monitor operation, 269
- SPR configuration tag (AIR), 144
- start_air shell script, 139
- Status display
 - file system monitor, 275
- strcmp command, 274
- su log, 72
- swain device activity counter, 285
- swapout device activity counter, 285
- swapping
 - URM oversubscription targets, 403, 404
- switch device activity counter, 286
- swpocc device activity counter, 286

- swpque device activity counter, 286
 - syscall device activity counter, 286
 - sysexec system call, 286
 - sysfork system call, 286
 - sysinfo.h file, 284
 - syslstio device activity counter, 288
 - sysrda device activity counter, 288
 - sysread system call, 286
 - System
 - accounting logs, 73
 - activity log, 76
 - activity monitoring, *see* System activity, 283
 - billing unit (SBU)
 - and CSA setup, 12
 - connect time, 45
 - defined, 40
 - device, 47
 - multitasking, 43
 - nonprime time, 41
 - NQS, 45
 - pacct, 41
 - prime time, 41
 - SDS, 43
 - UNICOS tape subsystem, 46
 - file system quotas startup, 252
 - I/O
 - data collection, activity monitoring, 324
 - monitoring, system activity package, 283
 - resources and fair-share scheduler, 191
 - startup, quota feature, 252
 - table, overflow counters, 284
 - System activity
 - commands, 289
 - counters, 284
 - CPU data, 321
 - data
 - file format, 333
 - gathering, 318
 - reporting, 318
 - monitoring
 - csam curses display, 298
 - sam, 295
 - xsam windows display, 303
 - package (sar), 284
 - package, Cray Research (sam), 295
 - package, standard UNIX (sar), 283
 - reporting
 - operational setup (tsar), 343
 - reporting (sar), 284
 - reporting package, 318
 - reports, 289
 - shell scripts, 293
 - source files, 293
 - System calls
 - data
 - system activity reporting, 322
 - fair-share scheduler cost, 227
 - system activity data, 322
 - syswra device activity counter, 288
 - syswrite system call, 286
- T**
- Tables
 - file, 288
 - inode, 288
 - process, 288
 - text, 288
 - tacct errors, 89
 - Tailoring CSA, 39
 - tape subsystems
 - and URM, 418
 - tape.exist AIR test, 423
 - tape.func AIR test, 423
 - tape.funct AIR test, 164
 - tape.response AIR test, 423
 - tapeavr.exist AIR test, 164, 423
 - Tapes
 - automated incident reporting (AIR), 137
 - data collection, 329
 - tcp.exist AIR test, 162, 423
 - tcp.funct AIR test, 423
 - TCP/IP, *see* Transmission control protocol/internet protocol, 137

tcpgated.exist AIR test, 162
 tcpgated.funct AIR test, 423
 tcplpd.exist AIR test, 162
 tcplpd.funct AIR test, 423
 tcpnamed.exist AIR test, 162
 tcpnamed.funct AIR test, 423
 tcpntpd.exist AIR test, 162
 tcpntpd.funct AIR test, 423
 tcpsmail.exist AIR test, 162
 tcpsmail.funct AIR test, 423
 tcpsnmpd.exist AIR test, 162
 tcpsnmpd.funct AIR test, 423
 Terminal
 activity monitoring, 330
 Text tables, 288
 textlock device activity counter, 288
 Thresholds
 free space, 269
 Tick, see CPU tick, 227
 Time
 synchronization daemon, 161
 timex command, 284, 290
 timex.c program, 294
 tpmnt command
 AIR function monitoring, 164
 Transmission Control Protocol/Internet
 Protocol (TCP/IP)
 existence test, 423
 existence test (AIR), 162
 functional invocation test (AIR), 162
 functional test, 423
 gated functional test, 423
 lpd functional test, 423
 monitoring functions (AIR), 161
 named functional test, 423
 ntpd functional test, 423
 sendmail functional test, 423
 snmpd functional test, 423
 Transmission control protocol/internet protocol
 (TCP/IP)
 automated incident reporting (AIR), 137
 performance monitoring, 330
 tsar command, 318

 description, 320
 examples, 346
 report formatting, 347
 sdc data collection, 346
 tsar data collection, 346
 language, 337
 boot time data, 344
 built-in functions, 340
 built-in variables, 343
 crontab entries, 345
 difference between sdc and sdcx, 343
 operators, 339
 shutdown time, 345
 statements, 337
 limitations, 349
 modes, 335
 nawk
 language, 337
 scripts, 320, 335
 operational setup, 343
 report formatting example, 347
 source scripts, 320, 337
 debugging, 335
 description, 335
 sections, 335
 tsar language
 description, 337
 tuning URM, 400
 TYPE configuration keyword (AIR), 144, 149
 installation tool menu, 143

U

udbgen command, 193, 206–208, 215, 218, 237
 udbsee command, 193, 197
 UNICOS
 kernel
 automated incident reporting (AIR), 137
 UNICOS installation menu system (installation
 tool)
 AIR configuration file, 138, 140

- automated incident reporting (AIR), 143
- configuration (AIR)
 - function, 171
 - function return configuration, 147
 - product enable, 147
 - product functions, 147
- coordinator setup, 142
- corresponding operational keywords (AIR), 142
- menu, 142
- UNICOS tape subsystem
 - AVR existence test, 423
 - daemon response test (AIR), 164
 - enabling accounting, 12
 - existence test, 423
 - existence test (AIR), 163
 - functional test, 423
 - functional test (AIR), 164
 - I/O, 287
 - product testing (AIR), 163
 - response test, 423
 - response test (AIR), 164
- Unified Resource Manager (URM), 400
 - and fair-share scheduler, 192, 202, 390
 - and NQS, 372, 389, 417
 - architecture, 392
 - auto-configuration settings, 369
 - batch systems, 372, 405, 406, 408, 411, 414, 415, 418–420
 - changing minimum rank, 376
 - checkpointing, 396
 - command summary, 355
 - configuration, 357, 359
 - activation of changes, 371
 - default values, 371
 - night/day changes, 376
 - control settings, 366, 368, 406, 408, 410, 415, 421
 - CPU usage, 417
 - daemon (urmd), 356, 388, 392
 - data structures, 380
 - features, 354
 - group scheduling control, 408, 419
 - initiation recommendations, 405, 406, 419, 420
 - installation, 355
 - interactive systems, 402, 421, 407, 414, 420
 - job count, 418
 - job ranking, 376, 378, 406, 415
 - job scheduling delay, 406
 - jobs, 375
 - kernel information delay, 406
 - log files, 373, 374
 - /machine/default values, 421, 414
 - /machine/jobmax values, 414, 415, 418–420
 - /machine/load values, 410, 414
 - /machine/rate values, 414
 - /machine/target values, 401–405, 408, 409, 419
 - main loop delay, 405, 406
 - maximum session target, 405
 - memory oversubscription target, 402, 403
 - monitoring cycles, 405
 - permanent changes, 401
 - query and command server, 393
 - resource loads, 395, 402, 404, 406, 410, 411, 413
 - rmgr command, 355, 401
 - batch job selection criteria, 415
 - controlling interactive sessions, 421
 - enabling group scheduling control, 409
 - interactive job count, 420
 - machine target values, 401
 - main loop delay, 406
 - memory oversubscription target, 403
 - resource loads, 411
 - SDS information, 408
 - smoothing factors, 414
 - /urm/share_to_go value, 407
 - viewing machine load, 375
 - viewing users, 375, 376
 - SDS management (sdsmgr), 393, 407
 - SDS oversubscription target, 404
 - SDS usage, 418
 - security parameters, 359
 - selection server, 392
 - service providers, 359
 - session initiators, 411, 414, 415, 418, 420

- share evaluation, 407, 416
- smoothing, 402, 410–413
- troubleshooting, 388
- tuning, 400
- /urm values, 406, 407, 416–418
- urmd command, 355, 388
- urmsnap command, 355
- user exits, 377, 378, 381, 383, 385, 386
- usetjob command, 355, 376
- ustat command, 355, 376
- viewing machine load, 375
- Unified resource manager (URM)
 - automated incident reporting (AIR), 137
- unknown account in user database (UDB), 210
- URM
 - daemon existence test, 424
 - daemon response test, 424
 - functional test, 424
- URM, see Unified Resource Manager, 400
- URM, see Unified resource manager, 137
- urm.exist AIR test, 424
- urm.funct AIR test, 424
- urm.response AIR test, 424
- /urm values, 406, 407, 416–418
- urmd command, 355
 - description, 388
- urmd daemon
 - existence test (AIR), 165
- urmsnap command, 355
- Usage history and fair-share scheduler, 192, 193, 195, 218
- User
 - attributes and fair-share scheduler, 192
- User database (UDB)
 - allocation of shares, 207
 - and fair-share scheduler, 191, 194, 195, 205, 209
 - CPU quota feature, 237
 - default entries, 210
 - maintenance, 193, 206–208, 215, 218
 - resource control, 194, 195
 - skeleton file (initudb), 210
 - special system accounts, 196, 205, 207, 209, 210
 - special system entries, 210

- udbgen command, 237
- User exits
 - accounting, 18
 - site-generated, 27, 51, 52
 - csarun, 16
 - daily accounting, 83, 84
 - runacct, 84
 - USEREXIT point, 87
- user exits
 - and URM, 377, 378, 381, 383, 385, 386
- User-initiated exchanges, 288
- usetjob command, 355
 - description, 376
 - /usr/adm/acct directory, 5, 23
 - /usr/adm/acct/day directory, 7, 80
 - /usr/adm/acct/work directory, 8
 - /usr/lib/acct directory, 80
- ustat command, 355
 - description, 376

W

- WARN_ADMIN configuration tag (AIR), 144
- WARN_OPS configuration tag (AIR), 144
- WARN_USERS configuration tag (AIR), 144
- WMAILLIST variable, 53
- write system call, 286, 287
- writea system call, 288
- writtech device activity counter, 287
- wtmp
 - errors, 89
 - file, 20

X

- X Window System
 - xsam utility, 303
- xmppview command, 284, 291
- xmtint device activity counter, 287
- xsam utility, 295, 296

- commands, 307
 - description, 309
 - help, 309
 - host, 309
- Config display, 313
- console window, 305
- description, 303
- device display
 - disk I/O, 315
 - logical device I/O, 315
- File menu, 307
- Fork xsam, 310
- graph console, 313
- host display, 309
- Kernel Graphs, 313
- map display, 314
- Memory Map, 314
- record/playback menu, 312
- set-up commands, 310
- Setup display, 310
- snapshot command, 315
- Snapshot display, 315
- Swap Map, 314
- View menu, 307
- windows, 304
- X11 window settings, 303
- xswapin device activity counter, 286
- xswapout device activity counter, 286