Index

Note to the Reader: Throughout this index boldfaced page numbers indicate primary discussions of a topic. Italicized page numbers indicate illustrations.

A
A (hostname) records
  Autodiscover, 151, 155–156
  receiving email, 605
  abbreviations, command-line, 255
accepted domains, 329
  EAC for, 329–331, 330, 620–621
  EMS for, 331, 621
Accepted Domains page, 329, 330, 620–621
Access control entries (ACEs), 286
  access control lists (ACLs), 286
Account section, 161
  accounts
    creating, 346–347, 347
    migrating, 278–279
    scripts, 377–378
    in upgrade strategies, 264
    ACEs (access control entries), 286
    ACLs (access control lists), 286
    actions in transport rules, 649–650, 650
Activate This Rule On The Following Date option, 653
Activation Reference Number setting, 523
Active Clustered Mailboxes, 204
Active Directory (AD), 242–243
  administrator roles, 309–312, 309–310, 312
  auditing, 321
  Client Access server proxying, 567
  Client Access servers, 565
  in disaster recovery, 59
  DNS. See Domain Name System (DNS)
  domain preparation, 248
  email routing, 600
  existing organizations, 243
  forests, 245–248, 246
  mail-enabled groups, 390, 390
overview, 11–12, 12
  RBAC data in, 296, 296
  requirements, 236–237
  schemas, 243–245, 244
  transport rules, 647–648
  upgrades, 261–262, 264
  Windows requirements, 183–184, 184
Active Directory Migration Tool (ADMT), 274
Active Directory Schema snap-in, 244
Active Directory Topology service
  Client Access servers, 212
  Mailbox servers, 207
Active Directory Users and Computers
  administrator roles, 311
  contacts, 405, 405
  group membership, 404
  mail-enabled groups, 390–391, 404
  recovery, 719
  user accounts, 347
Active Manager
  BCSS process, 532–538
  DAC, 540–541
  DAG mailbox databases, 521, 524
  overview, 529–531, 531
  Safety Net, 625–626
  working with, 532, 533

/AddActiveDirectorySplitPermissions option, 253

ActiveSync, 171
  Client Access coexistence, 576, 577, 582, 583
  policies, 49, 49

ActiveSyncMailboxPolicy
  noun, 105

AD Site delivery group, 602
Add cmdlet verb, 105
Add-ADPermission cmdlet, 345–346
Add-ContentFilterPhrase cmdlet, 632
Add Database Copy option, 523
Add-DatabaseAvailability
  Group cmdlet, 515
Add-DatabaseAvailability
  GroupServer cmdlet, 516, 720
Add-DistributionGroup
  Member cmdlet, 198, 401, 405
Add-MailboxDatabase
  Copy cmdlet, 525, 527, 720
Add-MailboxPermission
  cmdlet, 345
Add-ManagementRole
  Entry cmdlet, 291, 301
Add-PublicFolderClient
  Permission cmdlet, 446
Add-RoleGroupMember
  cmdlet
    administrators, 311
    Discovery Manager role, 477
    RBAC, 292
Add-WindowsFeature cmdlet,
  232, 243, 700
Address Book policy, 343, 350
address lists in OAB
  clients, 501
  mailbox databases, 193
  address space for connectors, 618
addresses
  email. See email addresses
  IP. See IP addresses
  postmaster, 199

/AddUmLanguagePack
  option, 257
AddUsersToPFRecursive.ps1
  script, 446
Admin Roles page, 289–290, 312, 313
AdminClassificationPath setting, 645
administration
EAC. See Exchange Administration Center (EAC)
EMS. See Exchange Management Shell (EMS)
Administrator Notifications settings, 628
Administrator Roles page, 289
administrators
EAC for, 555–556
public folder databases, 442
RBAC for
overview, 287–288, 288
permissions, 322–323
roles
adding, 311–314, 312–313
assignment process, 309–311, 309–311, 315
groups, 314–315
ADModify.NET tool, 25, 25
ADMT (Active Directory Migration Tool), 274
affinity, server, 572–573
Age Limits setting, 438
agents
anti-spam, 630
transport, 48
Alias property and aliases
cmdlets, 110–111
distribution groups, 402
mail-enabled contacts, 410
mail-enabled groups, 391
mailboxes, 341–342
All Public Folders folder, 447–448
Allow Override rule, 657
AllowForwardEnabled option, 622
alternate database recovery
locations, 706–707
alternate journaling mailboxes, 666
analyzers and troubleshooters
ExBPA, 25, 678
ExRCA, 692, 692
RCA. See Remote Connectivity Analyzer tool (RCA)
/AnswerFile option, 253
anti-spam/anti-malware tools, 626–627, 626
agents, 630
anti-malware policy, 627–629, 628
cost filtering, 630–633
generate updates, 627
managing, 629–630
recipient filtering, 633
sender filtering, 634
sender reputation, 635–636
tarpitting, 633–634
Anti-spam Update service, 207
anti-spoofing, 634–635
APIs (application programming interfaces), 47–48
Appendix A in email retention policies, 457
Appendix B in email retention policies, 457
appliances in disaster recovery, 61
Application Cache, 552
application integration tasks, 18
application programming interfaces (APIs), 47–48
Applied Automatically To A Folder retention tags, 381
Applied Automatically To Entire Mailbox retention tags, 381
Applied By Users To Items And Folders retention tags, 381
Apply This Rule If condition, 653
architecture overview, 9
content storage, 42–43
Edge Transport servers, 34–35, 35
ESE, 10–11, 10
high-availability, 39–42, 40–41
installer, service pack, and patching improvements, 30–31
management, 43–44, 44
server roles, 31–34
unified messaging, 35, 36–37
x64 processors, 29–30
Archival pillar in DCAR framework, 78
Archive Mailbox, 45
ArchiveQuota option, 474
ArchiveWarningQuota option, 474
archiving. See email archiving
arrays, RAID, 72–75
Arthur Andersen, 455
assigning
mailboxes
EMS for, 343–345
to multiple users, 343
retention policies, 384–386, 385
roles
to administrators, 309–315, 309–311
to end users, 315–319, 316, 318
Association Cookie/GUID
Hotfix, 233
asterisks (*)
address space, 618
cmdlets, 135
operators, 112
roles, 298
Attachment Not Supported rule, 658
AttachmentExtension
MatchesWord parameter, 649
Attempt Copy Last Log (ACLL) process, 534
attributes for public folders, 444–445
Audit This Rule With Severity Level option, 653
auditing in RBAC, 320–323, 321
authentication in RBAC, 312, 317
authoritative domains, 329, 622
AutoAccept option, 425
AutoConfiguration tests, 690–691, 690
AutoDatabaseMountDial parameter, 534–535
Autodiscover feature, 149
  benefits, 556
  certificates, 163–164
deploying, 168–173,
  169–171
EAC for, 168–171, 169–171
EMS for, 171–173
names, 167–168
X.509, 164–167, 165–167
Client Access coexistence,
  578, 579, 584–586, 585–586
client benefits, 150–153
concepts, 149–150
DNS options, 155–157
deploying, 168–173,
  169–171
EAC for, 168–171, 169–171
EMS for, 171–173
names, 167–168
X.509, 164–167, 165–167
Client Access servers,
  587
Client Access servers, default,
  587–588
bulk manipulation of mailboxes,
  376–378
business archiving, 465
business continuity (BC) vs.
disaster recovery, 59–60
business viewpoint, 55–56

B
back pressure, 683
backplanes for RAID, 75
backticks (‘) in EMS, 443
Backup Once wizard, 702
Backup Options screen, 702
Backup Schedule wizard, 703
bandwidth Calculator tool, 550
BC (business continuity) vs.
disaster recovery, 59–60
BES (Blackberry Enterprise
  Server), 345
block mode replication vs. file
  mode, 508–509
blogs, 22
bookings, mailbox resource
  schedules for, 418–421
buffers for replication logs, 509
bulk manipulation of mailboxes,
  376–378
business archiving, 465
business continuity (BC) vs.
disaster recovery, 59–60
business viewpoint, 55–56

C
Caches
  disk, 226–227
  EXPAND GROUP, 464
Calendar Properties dialog, 564
calendars for sharing levels, 564
capacity-bound servers, 13
case sensitivity in cmdlets, 104
case sensitivity in cmdlets, 104
CASMBox noun, 105
certificates
  Autodiscover. See
  Autodiscover feature
  Client Access servers, 587
default, 587–588
SAN, 589, 590
  wizards, 589–592
  SSP, 590–591
  SSL, 197
  CEIP (Customer Experience
  Improvement Program), 249
  CEM (Cutover Exchange
  Migration), 272
  Certificate Domains page, 169,
  170
  Certificate window, 588, 588
  CAL (Client Access License), 379
  CEIP (Customer Experience
  Improvement Program), 249
  CEM (Cutover Exchange
  Migration), 272
  Certificate Domains page, 169,
  170
  Certificate window, 588, 588
  CEM (Cutover Exchange
  Migration), 272
  Certificate Domains page, 169,
  170
  Certificate window, 588, 588
  CAL (Client Access License), 379
  Calendars for sharing levels, 564
  capacity-bound servers, 13
  case sensitivity in cmdlets, 104
  CEM (Cutover Exchange
  Migration), 272
  Certificate Domains page, 169,
  170
  Certificate window, 588, 588
  CAL (Client Access License), 379
Certificates snap-in, 165, 165
Change Schema Master dialog, 244, 244
Check for Updates page, 249
Choose A Mode For This Rule option, 653
Circular Logging feature, 498
Citibank, 456
Citigroup, 456
classifications, message. See message classifications
Clean-MailboxDatabase cmdlet, 375, 709
Clear-Host cmdlet, 110
Client Access License (CAL), 379
Client Access servers, 12, 547
architecture, 548, 548
Autodiscover service, 556–561, 557–558
Availability service, 564
best practices, 269
certificates, 587
default, 587–588, 588
SAN, 589, 590
wizards, 589–592, 590–591
coeistence, 573–574
description, 31–32
EAC, 554–561, 554, 557–558
FET service, 592–595
IMAP4/POP3, 563–564
load balancing, 572–573
mail routing, 210, 210
memory recommendations, 222
multirole servers, 566–567
namespace planning, 567–572, 568
network placement, 565, 566
Outlook Anywhere, 561–563, 562
overview, 208–210, 209
OWA, 551–554, 553–554
perimeter networks, 211
positioning, 565
processor requirements, 220, 222
proxying, 567–571, 568
receive connectors, 607–608, 607–608
recovery, 719
redirection, 571–572
remote PowerShell, 550–551
requirements, 269, 548–550
role, 33–34
services, 212
Unified Messaging, 211, 595–596, 596
upgrades, 269
Windows, 232–235
Client Frontend receive connectors, 606–607
Client Proxy receive connectors, 606–607
Client Settings page, 501, 501
ClientAccessServer noun, 105
clients
administration tasks, 16
Autodiscover benefits, 150–153
connectivity, 37–38
connectivity troubleshooting, 689–693, 690, 692
e-mail archiving
requirements, 481
features, 49, 49
lab environments, 183
cloud computing, 271
cls cmdlet alias, 110
Cluster cmdlet, 530
Cluster Name Objects (CNOs), 510
clustered continuous replication (CCR), 39
clustered mailboxes, 204
cmdlets, 47, 103–104
aliases, 110–111
vs. commands, 107
parameters, 108–109
CNAME records
Autodiscover, 155–156
receiving email, 605
CNOs (Cluster Name Objects), 510
COBIT (Control Objectives for Information and Related Technologies), 63
coeistence
Client Access servers, 573–574
Exchange Server versions, 237–238
Office 365, 272–273
on-premise, 270–271
transport rules, 647–648, 648
combined function servers
overview, 213
processor requirements, 220
comma-separated value (CSV) files, 406
account creation, 377
reports, 129
command line
delegated server installation, 256
help from, 135–147
installation options, 252–257
server recovery options, 255–256
command-line installation, 192
commands
vs. cmdlets, 107
PowerShell syntax, 104
Common Name property, 166
communicating with users, 18
“Comparing the Power Utilization of Native and Virtual Exchange Environments” white paper, 89
Complete Pending Request Wizard, 170, 591
complexity impact in virtualization, 89
compliance and governance, 56
e-mail archiving, 459–461, 465
messaging records
management, 380
overview, 77–79
recoverable items, 715
retention policies, 384
Compliance Management option, 320
Compliance pillar in DCAR framework, 78
concatenated drives, 72
Conditions page, 336
configuration scope for roles, 303
-Confirm parameter, 109, 133
Confirmation screen backups, 704
database recovery, 705, 707
Connect A Mailbox Wizard, 374, 374, 301
Connect-Mailbox cmdlet, 375, 501, 709
Connectivity client, 37–38, 689–693, 690, 692
transport. See Transport services
Connector Source Server
delivery group, 603
connectors receive creating, 612–613
overview, 606–612, 607–608
send, 196
creating, 617–618, 617
on-premise coexistence, 271
overview, 614–617, 615
Consequences section, 457
Contact Information and
Organization page, 349
contacts
mail-enabled creating, 405–406, 405–406
EAC for, 407–409, 408
EMS for, 409–410
overview, 326–327
synchronizing, 327
Contains operator, 112
content
control improvements, 44–49, 46
filtering, 630–633
mailbox, 378–380
storage improvements, 42–43
Continual Service Improvement
text, 63
continuous replication, 39–41, 40, 69, 507
Control Objectives for
Information and Related
Technologies (COBIT), 63
conversions of distribution
groups to universal groups, 398–400, 399
ConvertTo-HTML cmdlet, 372
copy backups, 57
copying XML files, 644
corporate governance for email
retention policies, 457, 465
corrupted databases
issues, 699
recovery goals, 697
costs, virtualization, 89
CPU-Z program, 221, 221
CPUs. See processors
crawling, 15
Create An On-Premises Archive
Mailbox For This User option,
472, 473
Create New Folder dialog, 447, 447
Create On-Premises Archive
option, 343
-Credential parameter, 109
CSV (comma-separated value)
files, 406
account creation, 377
reports, 129
Cumulative Update packs, 86
CurrentType option, 622
custom roles, 299
defining, 301–302
operation, 300, 300
custom scopes, 306–308, 307
Custom send connector type, 617
CustomAttribute properties
distribution groups, 402
mail-enabled contacts, 410
Customer Experience
Improvement Program (CEIP), 249
/CustomerFeedbackEnabled
option, 253
Cutover Exchange Migration
(CEM), 272
D
DAC (Datacenter Activation
Coordination), 540–541
DACP (Datacenter Activation
Coordination Protocol), 540–541
DAGs. See database availability
groups (DAGs)
daily tasks, 16–18
DAS (direct attached storage)
description, 70
overview, 71–75
data availability. See high
availability (HA)
Data Loss Prevention (DLP), 649
overview, 655
policies
creating, 660–664, 661–663
overview, 655–660, 657–659
database availability groups
(DAGs), 507
Active Manager. See Active
Manager
adding mailbox databases,
521–528, 521–525
anatomy, 509–511
creating, 513–515, 514
dynamic quorums, 511–512
email archiving, 480
file share witnesses, 512–513, 513
heartbeats, 512
mailbox databases, 521–528, 521–525
managing, 515–516
multiple databases per
volume, 516–518, 517
networks, 518–520, 518–519
purpose, 66
in recovery, 699
replication, 508–509
site resiliency. See site resiliency
virtualization, 85, 95–96
Database Properties dialog, 709
DatabaseList parameter, 307
DatabaseRestrictionFilter parameter, 307
databases
DAGs. See database availability groups (DAGs)
Exchange. See Exchange databases
in installation, 251
mailbox. See mailbox databases
Mailbox servers, 204
public folders. See public folders
storage groups, 11
Datacenter Activation Coordination (DAC), 540–541
Datacenter Activation Coordination Protocol (DACP), 540–541
/DbFilePath option, 253
DCAR (Discovery, Compliance, Archival, and Retention) framework, 77–79
DCPROMO, 262
DDGs (dynamic distribution groups)
creating, 393–395, 394
description, 390
Deactivate This Rule On The Following Date option, 653
-Debug parameter, 109
debugging from PowerShell, 132–133
dedicated disaster recovery sites, 61
dedicated servers, scaling to, 223
Default Frontend receive connectors, 196, 606–608, 608
Default option in cmdlet help, 134
default policy tags (DPTs), 467
Default Receive connectors, 607
defaults
Client Access Server certificates, 587–588, 588
folders, 380–381
public folder servers, 442
retention policy tags, 467–468
user roles, 316–317
Definitions section in email retention policies, 457
delegated server installation, 256
delegates for mailbox resources, 418
Delete All Attachments And Use Custom Alert Text option, 628
Delete All Attachments And Use Default Alert Text option, 628
Delete And Allow Recovery option, 381, 468
Delete messages that meet or exceed a specific SCL threshold option, 631
Delete The Entire Message option, 628
Deleted Item Retention setting, 438
Deleted Items folder and deleted mailbox items message recovery from, 712
retention setting, 382, 501
Deleted Items Recovery utility, 712
deleted mailboxes, reconnecting, 374–375, 374
deleting
mailbox, 372–374
retention tags, 471
Deletions folder, 713
Deliver Message To Both Forwarding Address And Mailbox option, 351
Delivery stage in MOF, 64
delivering email, 599
message routing. See message routing transport improvements, 599–600
delivery groups, 599, 602–603
Delivery Management page, 395–396, 396
Delivery Options settings mailboxes, 351–352, 352
public folders, 438
Delivery Type option, 684
dependencies
disaster recovery, 59
service recovery, 67
deployment
certificates, 168–173, 169–171
description, 260
hybrid, 262–264
in message classifications, 643–645
Deployment Assistant, 188
deprecated functions, 7
descriptions
events, 675–676
mail-enabled groups, 391
message classifications, 641
designing systems
network configuration. See networks
transport rules, 648
detailed option in cmdlet help, 135
diagnostic logging, 673–676, 675–676
Diagnostics service
Client Access servers, 212
Mailbox servers, 207
dial tone recovery, 711
dictionary spamming, 633
differencing VHDs, 85
differential backups, 57
digital signatures. See certificates
Dir cmdlet alias, 110–111
direct attached storage (DAS) description, 70
overview, 71–75
directing cmdlet output, 123–125
directory harvesting, 633
DirSync tool, 263
Disable cmdlet verb, 105
Disable-DistributionGroup cmdlet, 400, 402
Disable-Mailbox cmdlet, 373, 375, 473
Disable-MailContact cmdlet, 409
Disable-MailPublicFolder cmdlet, 445
Disable-MailUser cmdlet, 409
Disable-TransportRule cmdlet, 654
/DisableAMFiltering option, 253

disabling
email archiving, 473–474
mailboxes, 373
Disabling Archive option, 473

disaster recovery (DR). See recovery
disclaimers in HTML, 650–651

disconnected mailboxes, working with, 708–709

Discovery, Compliance, Archival, and Retention (DCAR) framework, 77–79
discovery in email archiving, 458
Discovery Management role, 314, 477
Discovery Search Mailbox, 717–718, 717
Discovery Searches, 715, 717
disk drives
 allocating, 493–494
 vs. I/O capacity, 490–491
recovery issues, 699
requirements, 226
caching and I/O profiles, 226–227
e-mail archiving and mail storage, 230–231
mail growth, 229–230
mailbox storage, 228–229
server sizing, 179
VHDs, 85, 180
Dismount cmdlet verb, 105
display names, 391
 mail-enabled groups
distribution groups, 402
 mail-enabled contacts, 410
message classifications, 641
display options in OWA, 552
DisplayName property
distribution groups, 402
 mail-enabled contacts, 410
distributing roles, 303
 administrators, 309–315
 end users, 315–319, 316, 318
 scope, 303–308
 Distribution Group Expansion Server delivery group, 603
distribution groups, 327
converting to universal groups, 398–400, 399
creating, 391–392
description, 390
dynamic, 393–395, 394
managing
 EAC for, 395–397, 396
 EMS for, 400–403
 moderation, 397–398
 retention tags, 469
DistributionGroup noun, 105
DLP (Data Loss Prevention), 649
 overview, 655
 policies
 creating, 660–664, 661–663
 overview, 655–660,
 657–659
 DLP Policy From Template window, 661, 661
DNS. See Domain Name System (DNS)
Do Not Mount This Database At Startup option, 498
document access in OWA, 554
documentation for help, 21–22, 21
does not contain operator, 112
domain controllers, 214
domain local groups, 390
Domain Name System (DNS)
 Autodiscover support, 151, 155–157
 Client Access servers, 573
 receiving email, 605–606
 send connectors, 618
domain secure TLS, 619
 -DomainController cmdlet parameter, 109
 /DomainController option, 253, 255
 DomainName parameter, 172
domains
 accepted, 329
 EAC for, 329–331, 330,
 620–621, 620–621
 EMS for, 331, 621
 forests functional levels, 184,
 184
 preparing for, 243, 248
 SMTP, 194–195
types, 329, 621–622
Domains page, 169
 /DoNotStartTransport option, 253, 255
 Don’t Ask Me About This Website Again option, 156
 Don’t Permanently Delete Items Until The Database Has Been Backed Up option, 501
Don’t Use Recommended Settings option, 249
double parity drives, 73–74
Download Updates For Me, But Let Me Choose When To Install Them option, 20–21
downtime, scheduled, 19–21
DPTs (default policy tags), 467
 DR (disaster recovery). See recovery
drives. See disk drives
Dumper 2.0, 711, 712
Dynamic Distribution Group Preview dialog, 395
dynamic distribution groups (DDGs)
 creating, 393–395, 394
description, 390
dynamic quorums, 511–512
dynamic VHDs, 85
DynamicDistributionGroup noun, 105

E
EAC. See Exchange Administration Center (EAC)
EAS (Exchange ActiveSync), 49
eCal licenses, 480
Echo cmdlet alias, 110
ECP (Exchange Control Panel), 171, 397, 404, 404, 552
EDA (Exchange Server Deployment Assistant), 281
EDB (Exchange database) files, moving, 496
Edge Transport servers
description, 31
future, 202
legacy versions, 212, 262
mail routing, 210
need for, 52
overview, 34–35, 35
purpose, 640
transport agents, 47
transport rules, 45
upgrades, 270
EdgeSync service
hybrid deployment, 263
Mailbox servers, 207
EdgeTransport.exe.Config file, 646
eDiscovery, 45, 458
implementing, 476
uses, 476–477
Effective Date setting, 456
Email Address Policies page, 331–332, 331
Email Address Policy page, 334
Email Address Policy Preview dialog, 336
email addresses, 329
accepted domains, 331, 331
policies, 329, 331–332, 331
changing, 332–333
creating, 333–336, 335–336
mailboxes, 349
public folders, 435, 438
SMTP domains, 194–195
SMTP addresses, 349, 349
Email Addresses Format page, 332
email archival, 455
built-in, 44–45
compliance, 459–461, 465
disaster recovery, 458–459
discovery, 458
disk drive requirements, 230–231
enabling, 472–474, 473
implementation example, 461
in-place vs. third-party enterprise, 466–467
industry best practices, 461–465
introduction, 455–456
vs. journaling, 664
overview, 14–15
policies, 467–471, 470
and PST files, 458, 462–464
quotas, 474
requirements and factors, 480–481
retention holds, 472
retention policies, 456–457, 464–465
storage factors, 489–490
storage reductions, 458, 461–465
Email Connectivity settings, 351
Email Options page, 396
email overview, 604. See also
message routing; messages
created in domains, 620–622,
620–621
database recovery, 705–707,
706
delivering, 599, 614
importance, 3–4
receive connectors
creating, 612–613
overview, 606–612,
607–608
receiving, 604–606
recovery, 704
routing troubleshooting,
636–637
Safety Net, 625–626
security, 618–619, 619
send connectors
creating, 617–618, 617
overview, 614–617, 615
sending, 131, 613–614
shadow redundancy, 624–625
spam. See anti-spam/anti-
malware tools
EmailAddressPolicy noun, 105
EMC. See Exchange Administration Center (EAC)
EMS. See Exchange Management Shell (EMS)
Enable Background Database Maintenance option, 498
Enable Circular Logging option, 498
Enable cmdlet verb, 105
Enable-DistributionGroup cmdlet, 392, 400–401
Enable-ExchangeCertificate cmdlet, 173, 592
Enable-Mailbox cmdlet, 198, 286, 343, 384–385, 473, 489
Enable-MailContact cmdlet, 408–409
Enable-MailPublicFolder cmdlet, 445
Enable-MailUser cmdlet, 409
Enable-OutlookAnywhere cmdlet, 691
Enable-TransportRule cmdlet, 654
EnableClassifications setting, 645
/EnableErrorReporting option, 253, 255
enabling messaging records management, 386–387
encryption in TLS, 619, 619
end users
distributing roles, 315–319,
316, 318
permissions, 323
RBAC for, 288, 289
endpoints in migration, 278
Enforce mode in DLP, 656
enterprise archives, 466–467
environmental impact of virtualization, 88
-eq operator, 112
equals operator, 112
equipment mailboxes, 413
error reporting in installation, 249
Errors Message Center, 676
ESE (Extensible Storage Engine)
compression features, 480
databases, 485
eseutil.exe command, 707
Event ID setting, 675
event logs, 675–676
Event Viewer, 673–676, 675–676
EWS (Exchange Web Services), 171
Example option for cmdlet help, 134
ExBPA (Exchange Best Practices Analyzer) tool, 25, 678
exceptions in transport rules, 648–649, 649, 653
EXCH protocol section, 161
Exchange ActiveSync (EAS), 49
Exchange Administration Center (EAC), 44, 44
accepted domains, 329–331, 330, 620–621, 620–621
archive quotas, 474
Autodiscover certificates, 168–171, 169–171
Client Access servers, 554–561, 554, 557–558
DAGs
creating, 513–515, 514
mailbox databases, 522–524, 523–524
DLP settings, 660–662, 661–662
email archives, 472
mail-enabled contacts, 407–409, 408
mail-enabled groups
creating, 391–392
dynamic distribution groups, 393–395, 394
managing, 391–392, 395–396, 396
mailboxes
moving, 361–364, 362–363
properties, 347–352, 348–350, 352
reconnecting, 374–375, 374
resource scheduling,
418–422, 419
message tracking, 687–688, 687
messaging records management, 380
and OWA, 571
Queue Viewer, 684–685, 684
for RBAC, 289–290, 289–290, 320, 321
SAN certificates, 590
send connectors, 615
transport rules, 645, 646, 651–653, 652
users
creating, 346–347, 347
properties, 347–352, 348–350, 352
Exchange Best Practices Analyzer (ExBPA) tool, 25, 678
Exchange Client Bandwidth Calculator tool, 550
Exchange Control Panel (ECP), 171, 397, 404, 404, 552
Exchange database (EDB) files, moving, 496
Exchange databases
characteristics, 488
disk size vs. I/O capacity, 490–491
email archives, 489–490
evaluating, 491
factors, 488–489
overview, 485–486
sizes, 491–492
terminology, 486–487
Exchange Management Shell (EMS). See also PowerShell
accepted domains, 331, 621
Autodiscover certificates, 171–173
converting distribution groups to universal groups, 398–400, 399
DAGs
creating, 515–516
mailbox databases, 524–526
DLP settings, 663–664, 663
Edge Transport, 34
e-mail sending, 131
functions, 28–29
mail-enabled contacts, 409–410
mail-enabled groups, 400–403
mailboxes
assigning, 343–345
bulk manipulation, 376–378
moving, 364–369
permissions, 343–345, 344
reconnecting, 375
resource scheduling, 422–424
message classifications, 641
message tracking, 688
messaging records management, 380
public folders, 442–447
RBAC, 291–293, 321–322
SAN certificates, 592
send connectors, 615
test cmdlets, 24
transport rules, 645, 654–655
user properties, 352–360
Exchange Organization screen, 189, 190
Exchange Server 2007
coexistence, 238, 580–587, 580–586
Exchange Server 2010
coexistence, 238, 574–580, 575–580
Exchange Server 2013 overview, 5–6, 27–28
architecture, 10–11, 10, 29–30
client connectivity, 37–38
client-side features, 49, 49
content storage, 42–43
Edge Transport services, 34–35, 35
e-mail archiving, 14–15
EMS, 28–29
high availability, 39–42, 40–41
installer, service pack, and patching, 30–31
mailbox growth, 12–13
Managed Store, 38–39
management, 43–44, 44
message and content control, 44–49, 46
misconceptions, 51–52
mobile clients and security, 49, 49
obsolete features, 50–51
personal folders, 13–14
programming interfaces, 47–48
public folders, 15–16
roles, 31–34, 32–33
Unified Messaging, 35, 36–37
utilization determination, 90
Exchange Server Deployment Assistant (EDA), 281
Exchange Server-managed APIs, 47
Exchange Server Profile Analyzer, 219
Exchange Server Remote Connectivity Analyzer (ExRCA), 692, 692
Exchange Web Services (EWS), 171
ExchangeServer noun, 105
ExchHelp.chm file, 133
existing organizations in Active Directory, 243
ExMerge tool, 275
expand group caches, 646
Expansion Servers, 397
explicit scopes for roles, 305
Export-Clixml cmdlet, 129, 372
Export-Csv cmdlet, 129, 372
Export-DlpPolicyCollection cmdlet, 663, 663
Export-Mailbox cmdlet, 275
Export-MailPublicFoldersForMigration.ps1 script, 446
Export-OutlookClassification .ps1 script, 644
Export-PublicFolderStatistics .ps1 script, 431, 446
Export-TransportRuleCollection cmdlet, 647, 719
exporting classifications, 644
EXPR protocol section, 161
ExRCA (Exchange Server Remote Connectivity Analyzer), 692, 692
Extensible Storage Engine (ESE)
compression features, 480
databases, 485
memory usage, 95
overview, 10–11, 10
external Autodiscover, 557–559, 558, 691–692, 692
external journal recipients, 665
external mail flow, enabling, 195–196
external relay domains, 329, 622
External scope in journaling, 665
ExternalURL parameter, 561, 569–571
failover
Active Manager, 532–538
clustering, 68–69, 509–511
fault tolerance in high availability, 66
Favorites list, 449
faxes, 9
Federal employment-related archiving regulations, 460
Federal Rules of Civil Procedure (FRCP), 456, 459–460
Federaed Search, 45
Federated Sharing Policy option, 350
FET (Front End Transport) service, 592–593
architecture, 593–594, 593–594
Client Access servers, 212
message routing, 594–595, 602
receive connectors, 608
file mode replication vs. block mode, 508–509
file share witnesses, 512–513, 513
files, cmdlet output to, 129–130
Filter Pack, 185–186
filters
content, 630–633
dynamic distribution groups, 393–394
eDiscovery, 478
output, 111–124
OWA, 554
recipient, 633
sender, 634
Financial Industry Regulatory Authority (FINRA), 459
fixed VHDs, 85
flexible single master operations (FSMO), 245
FOIA (Freedom of Information Act), 460
folder links, 16
folders, 379
default, 380–381
Mailbox servers, 204
moving items between, 469
personal, 13–14, 279–280
public. See public folders
Forefront Threat Management Gateway, 211
forests
Active Directory, 245–248, 246
functional levels, 184, 184
lab environments, 182
Format-List cmdlet, 123, 126–127, 353, 356
Format-Table cmdlet, 124–125, 127
formatting output, 122–123, 123
forums, 21–22
Forward To permission, 438
FRCP (Federal Rules of Civil Procedure), 456, 459–460
free/busy access, 564
Freedom of Information Act (FOIA), 460
FriendlyName parameter, 172
From Address setting, 685
Front End Transport (FET) service, 592–593
architecture, 593–594, 593–594
Client Access servers, 212

message routing, 594–595, 602
receive connectors, 608
FSMO (flexible single master operations), 245
Full Access permission assigning, 345
vs. Send As, 345
full backups, 56
Full option for cmdlet help, 135

G
-ge operator, 112
General settings
dynamic distribution groups, 393–395
mailbox databases, 497–498, 497
mailboxes, 348, 348
public folder mailboxes, 433, 434
public folders, 436–438, 437, 448, 448
universal groups, 399, 399
GenerateIncidentReport action, 650, 659
GenerateRequest parameter, 172
geographic roles vs. tiered, 308
Get cmdlet verb, 105
Get-AcceptedDomain cmdlet, 331, 621
Get-CalendarProcessing cmdlet, 422–423
Get-CasMailbox cmdlet, 352, 359–360
Get-ChildItem cmdlet, 110–111
Get-Command cmdlet, 134
Get-Content cmdlet, 110
Get-Counter cmdlet, 509
Get-DatabaseAvailability
  Group cmdlet, 530
Get-DatabaseAvailability
  GroupNetwork cmdlet, 540
Get-Date cmdlet, 372
Get-DistributionGroup cmdlet
  bulk manipulation, 376–377
  description, 400, 402
  email addresses, 333
universal groups, 399–400
Get-DistributionGroupMember cmdlet
  group manipulation, 124–125, 376–377, 401–402
  piping, 365
  retention properties, 385–386
  retention tags, 469
Get-DLPPolicy cmdlet, 663
Get-DLPPolicyTemplate cmdlet, 663
Get-DynamicDistributionGroup cmdlet, 401
Get-EmailAddressPolicy cmdlet, 333
Get-ExCommand cmdlet, 24, 134
Get-FrontEndTransportService cmdlet, 637
Get-Group cmdlet, 400
Get-Help cmdlet, 106, 135–147
Get-IRMConfiguration cmdlet, 666
Get-Mailbox cmdlet
  bulk manipulation, 376–377
  email addresses policies, 333
  end users, 323
  file output, 129–130
  -Identity parameter, 106–107
  inputs, 124
  mailboxes
    moving, 365, 368–369
    properties, 352, 355–359, 415–416
  output, 111, 111
  filtering, 111–112
  formatting, 122–123, 123
  parameters, 108–109
  properties, 116–122
  public folder mailboxes, 445
  public folders, 435
  RBAC, 295
  recoverable items, 714
  resource mailboxes, 418
  automatic processing, 425
  migrating, 426
  retention policies, 386
  retention tags, 471
  SCL settings, 632
Get-MailboxCalendar
  Configuration cmdlet, 424
Get-MailboxDatabase cmdlet
  DAG member recovery, 720
  mailbox database properties, 498, 501–505
  OAB, 193
  quotas, 505
  viewing, 494–495
Get-MailboxDatabaseCopy
  Status cmdlet, 526, 681–682
Get-MailboxImport
  Request cmdlet, 279
Get-MailboxImportRequest
  Statistics cmdlet, 279
Get-MailboxStatistics cmdlet
default format, 126
disconnected mailboxes, 708–709
help, 136–147
information from, 219
lists, 126–127
moving mailboxes, 361, 370–372
output example, 130
poison mailboxes, 680
RBAC, 286
reconnecting mailboxes, 374–375
replication health, 682
sorting and grouping, 128
Get-MailContact cmdlet, 333, 409
Get-MailPublicFolder cmdlet, 445
Get-MailUser cmdlet, 409
Get-MalwareFilteringServer cmdlet, 630
Get-ManagementRole cmdlet, 291, 303
Get-ManagementRole
  Assignment cmdlet, 292, 310, 322
Get-ManagementScope, 292
Get-MessageClassification cmdlet, 643
Get-MessageTrackingLog cmdlet, 660, 668
Get-MigrationBatch cmdlet, 368
Get-Module cmdlet, 232
Get-MoveRequest cmdlet, 365, 367
Get-MoveRequestStatistics cmdlet, 366–367
Get-OrganizationalConfig cmdlet, 631–632
Get-OutlookAnywhere cmdlet, 134
Get-PowerShellVirtualDirectory cmdlet, 551
Get-FSCommand cmdlet, 134
Get-PublicFolder cmdlet, 431, 444
Get-PublicFolderClient Permission cmdlet, 446
Get-PublicFolderMigration Request cmdlet, 432–433
Get-PublicFolderStatistics cmdlet, 443
Get-ReceiveConnector cmdlet, 608–612
Get-RemoteDomain cmdlet, 622–623
Get-ResourceConfig cmdlet, 417–418
Get-Resubmit cmdlet, 626
Get-RoleAssignmentPolicy cmdlet, 292, 318–319
Get-RoleGroup cmdlet, 291
Get-RoleGroupMember cmdlet, 292, 311
Get-SendConnector cmdlet, 616–617, 637
Get-SenderFilterConfig cmdlet, 634
Get-SenderIDConfig cmdlet, 635
Get-SenderReputationConfig cmdlet, 635–636
Get-Tip cmdlet, 147
Get-TransportConfig cmdlet, 666
Get-TransportRule cmdlet, 649, 654, 660
Get-TransportRuleAction cmdlet, 654
Get-TransportRulePredicate cmdlet, 654–655
Get-TransportServer cmdlet, 660
Get-TransportService cmdlet, 629, 637
Get-User cmdlet, 352–355
Get-WindowsFeatures cmdlet, 352–355
Get-TransportService cmdlet, 660
Get-TransportServer cmdlet, 660
Get-TransportRulePredicate cmdlet, 667
Get-TransportRuleAction cmdlet, 667
Get-TransportRule cmdlet, 667
Client Access server, 549–550
factors, 218
requirements, 260–261
server sizing, 178–180
upgrades, 260–261
virtualization requirements, 90–93
hardware-assisted virtualization, 84
hardware RAID, 75
HasSenderOverride parameter, 649
HCW (Hybrid Configuration Wizard), 272–273
Health Insurance Portability and Accountability Act (HIPAA), 459–460
Health Manager service
Client Access servers, 212
Mailbox servers, 207
heartbeats in DAG, 512
help
PowerShell, 106, 133–147, 134, 147
resources for, 21–22, 21
technical support, 22–23
Help cmdlet, 134
HiddenFromAddress
ListsEnabled property
distribution groups, 402
mail-enabled contacts, 410
Hide From Exchange Address
Lists option, 348
Hide This Group from Address
Lists option, 396
high availability (HA), 56
data, 68–69
vs. disaster recovery, 69
improvements, 39–42, 40–41
measuring, 66
network, 67–68
overview, 65–66
public folders, 450–451
service, 67
HIPAA (Health Insurance Portability and Accountability Act), 459–460
holds
archives, 45, 472
in-place, 475
hosted services in disaster recovery, 61
hostname (A) records
  Autodiscover, 151, 155–156
  receiving email, 605
hosts
  finding. See Domain Name System (DNS)
  virtual, 85
hot-swappable backplanes, 75
hotfixes, 31
HTML disclaimers, 650–651
Hub Transport servers, 640
deprecated functions, 204
description, 31
disappearance of, 222
functions, 599–600
journaling, 15
message routing, 600–603
Safety Net, 625–626
human resources, eDiscovery for, 476
Hybrid Configuration Wizard (HCW), 272–273
hybrid deployments
  Office 365, 271
  overview, 262–264
hypervisors, 84
I
/LinuxTerms option, 253, 255–257
IBM Tivoli Unified Process (ITUP), 62
-Identity parameter, 106–107, 109
IMAP protocol
  Client Access servers, 212,
  563–564
  Mailbox servers, 207
  migration in Office 365, 272
  proxy servers with, 569
  implicit scope, 303, 305
  implicit send connectors, 617
Import-DlpPolicyCollection cmdlet, 663–664
Import-DlpPolicyTemplate cmdlet, 664
Import-ExchangeCertificate cmdlet, 172, 592
Import-Mailbox cmdlet, 280
Import-MailPublicFoldersFor Migration.ps1, script, 446
Import-Module cmdlet, 185, 232–233, 700
Import-TransportRuleCollection cmdlet, 647
importing
  classifications, 644–645
  PST files, 279–280
In-Place eDiscovery & Hold Wizard, 475–479, 477–479
In-Place eDiscovery Search tool, 715
in-place email archiving,
  466–467
in-place holds
  archives, 45
  mailboxes in, 475
  settings, 715–717, 716
in-place upgrades, 260
inbound routing in FET, 594
Inbox, 9
incident reports in DLP, 659–660
incremental backups, 57
individual message recovery,
  699–700
industry best practices for email archiving,
  461–465
Information Store service, 38,
  206–207
Information Technology Infrastructure Library (ITIL), 63–64
inherited scopes, 303–305
input-output operations per second (IOPS)
  disk performance, 490–491
  requirements, 226–228, 480
Install-AntispamAgents.ps1 script, 630
Install Updates Automatically option, 20–21
Install-WindowsFeature cmdlet, 234, 243
installation, 186–187, 241
  Active Directory preparation,
  242–248, 244, 246
command-line, 192
  command-line setup,
  252–257
GUI-based, 187–192, 284–285, 250
language packs, 256–257
manual, 250
permissions, 237
post installation configuration. See post installation configuration prerequisites and best practices, 241–242
role order, 251
server roles installation order, 269–270
Installation Space and Location screen, 189, 189, 251
installer improvements, 30–31
/InstallWindowsComponents option, 253
Intelligent Message Filter feature, 630–633
internal Autodiscover, 556–557, 557, 690–691, 690
internal relay domains, 329, 622
Internal scope in journaling, 665
Internal Send connector type, 617
InternalNLBBypassURL property, 570
InternalURL parameter, 561,
  569–571
Internet Send connector type, 617
interoperability in migration,
  275–277
interorganizational migration
  on-premises, 273–277
  preparing for, 277
intraorganizational upgrades, 273
Introduction page for send connectors, 617
investigations, eDiscovery for, 477
I/O capacity vs. disk size,
  490–491
I/O profiles, disk drive requirements for, 226–228
IOPS (input-output operations per second)
**K**

Keep Deleted Items For (Days) setting, 501
Keep Deleted Mailboxes For (Days) setting, 709
keys
  Autodiscover, 164
  product, 198
  X.509 certificates, 166
keyword property for SCP, 155

**L**

lab environments, 182–183
lagged mailbox database copies, 526–528
language options, 256–257
Last Change Date and Changes Made setting, 456
Last Error option, 685
Last Full Backup value, 497
Last Incremental Backup value, 497
LCR (Local Continuous Replication), 39
load balancing
  Client Access servers, 565, 570, 572–575, 575–576
  fault tolerance, 66
  mail, 605–606
  namespaces, 539
  network, 68
Load Generator tool, 97
Local Continuous Replication (LCR), 39
locales in message classifications, 641
log files
  BCSS process, 534–535
diagnostic, 673–676, 675–676
disk drive requirements, 228–229
DLP incident reports, 660
eSE, 10–11, 10
event, 675–676
in installation, 251
mailbox database moving, 496–497
play down, 527
replication, 40, 509
transaction, 487
log shipping technology, 15, 39–40, 69
/LogFolderPath option, 253
Logged setting for diagnostic logging, 675
logical unit numbers (LUNs)
in disk numbers, 494
in virtualization, 91
logs. See log files
long lines in EMS, 443
ls cmdlet alias, 110

**J**

JBOD (Just a Bunch of Disks)
  DAGs, 516–517
description, 71–72
Jetstress tool, 97
Journal Recipient option, 498
journaling, 664
  vs. archiving, 664
considerations, 14–15
  in DCAR framework, 79–80
  implementing, 665
Office 365, 666
recipients, 498, 665
reports, 667
  traffic and security, 665–666
Junk Email folder, 631
Just a Bunch of Disks (JBOD)
  DAGs, 516–517
description, 71–72

**disk performance**, 490–491
requirements, 226–228, 480
IP addresses
  DAGs, 514
IPv6, 689
receiving email, 605–606
sending email, 613–614
iSCSI for DAG networks, 519
IsExcludedFromProvisioning option, 342
IsInternal option, 622
ISO 15489 (Worldwide) standard, 480
IsRemoteTest property, 683
Issue Warning At (MB) setting, 435–436
Issuer property, 166
IsSuspendedFromProvisioning option, 342
IT service management lifecycle, 64, 64
ITIL (Information Technology Infrastructure Library), 63–64
ITUP (IBM Tivoli Unified Process), 62

**J**

JBOD (Just a Bunch of Disks)
  DAGs, 516–517
description, 71–72
Jetstress tool, 97
Journal Recipient option, 498
journaling, 664
  vs. archiving, 664
considerations, 14–15
  in DCAR framework, 79–80
  implementing, 665
Office 365, 666
recipients, 498, 665
reports, 667
  traffic and security, 665–666
Junk Email folder, 631
Just a Bunch of Disks (JBOD)
  DAGs, 516–517
description, 71–72
**L**

lab environments, 182–183
lagged mailbox database copies, 526–528
language options, 256–257
Last Change Date and Changes Made setting, 456
Last Error option, 685
Last Full Backup value, 497
Last Incremental Backup value, 497
LCR (Local Continuous Replication), 39
load balancing
  Client Access servers, 565, 570, 572–575, 575–576
  fault tolerance, 66
  mail, 605–606
  namespaces, 539
  network, 68
Load Generator tool, 97
Local Continuous Replication (LCR), 39
locales in message classifications, 641
log files
  BCSS process, 534–535
diagnostic, 673–676, 675–676
disk drive requirements, 228–229
DLP incident reports, 660
eSE, 10–11, 10
event, 675–676
in installation, 251
mailbox database moving, 496–497
play down, 527
replication, 40, 509
transaction, 487
log shipping technology, 15, 39–40, 69
/LogFolderPath option, 253
Logged setting for diagnostic logging, 675
logical unit numbers (LUNs)
in disk numbers, 494
in virtualization, 91
logs. See log files
long lines in EMS, 443
ls cmdlet alias, 110

**K**

Keep Deleted Items For (Days) setting, 501
Keep Deleted Mailboxes For (Days) setting, 709
keys
  Autodiscover, 164
  product, 198
  X.509 certificates, 166
keyword property for SCP, 155

**L**

lab environments, 182–183
lagged mailbox database copies, 526–528
language options, 256–257
Last Change Date and Changes Made setting, 456
Last Error option, 685
Last Full Backup value, 497
Last Incremental Backup value, 497
LCR (Local Continuous Replication), 39
load balancing
  Client Access servers, 565, 570, 572–575, 575–576
  fault tolerance, 66
  mail, 605–606
  namespaces, 539
  network, 68
Load Generator tool, 97
Local Continuous Replication (LCR), 39
locales in message classifications, 641
log files
  BCSS process, 534–535
diagnostic, 673–676, 675–676
disk drive requirements, 228–229
DLP incident reports, 660
eSE, 10–11, 10
event, 675–676
in installation, 251
mailbox database moving, 496–497
play down, 527
replication, 40, 509
transaction, 487
log shipping technology, 15, 39–40, 69
/LogFolderPath option, 253
Logged setting for diagnostic logging, 675
logical unit numbers (LUNs)
in disk numbers, 494
in virtualization, 91
logs. See log files
long lines in EMS, 443
ls cmdlet alias, 110
Mailbox assistants service
Mailbox servers, 207
retention tags, 471
Mailbox Database setting, 342
mailbox databases, 11, 485
assigning, 342
availability groups, 11
client settings, 501, 501
configuring, 193
creating, 495–496, 495
DAGs, 521–528, 521–525
disk drive allocation,
493–494
improvements, 42–43
limits, 498–499, 499–500
mobility, 41–42
moving, 496–497
names, 496
number, 492
overview, 486–487
planning, 493
properties, 497–505, 497
replication health, 680–682
size, 491–492
viewing, 494–495
mailbox-enabled users
EAC for, 407
overview, 325–326
Mailbox Export Only role, 300
Mailbox Features page
policy assignments, 385,
385
settings, 350–352, 350
Mailbox Import Export role,
294–297, 295–297
Mailbox noun, 105
Mailbox Replica service, 207
Mailbox servers
Availability service, 564
databases, 204
description, 31–32
disk drive requirements,
228–229
desk traffic, 600, 600
memory allocation, 205–206,
206
memory recommendations,
223
overview, 204, 206
Mailbox Settings page for
assignments, 342–343
Mailbox Transport Delivery
service
Mailbox servers, 207
message routing, 602–603,
603
Mailbox Transport Submission
service
Mailbox servers, 207
message routing, 602, 604
Mailbox Usage page, 348, 435
MailboxDatabase noun, 105
mailboxes, 339, 486
archive quotas, 474
assigning
EMS for, 343–345
to multiple users, 343
bulk manipulation, 376–378
content, 378–380
DAGs, 518, 518
databases. See mailbox
databases
deleting, 372–374
disk drive requirements,
230–231
growth control, 12–13
in-place holds, 475
litigation holds, 475–479,
477–479
moving, 360–361
EAC for, 361–364, 362–363
EMS for, 277–279,
364–369, 376–377
MRM. See messaging records
management (MRM)
permissions, 343–346, 344
processor requirements, 220,
222
role, 32–33, 33
services, 207–208
transitions, 269–270
transport services, 204
troubleshooting, 678–682
Unified Messaging servers,
205
Windows, 232–234
Mailbox Settings page for
assignments, 342–343
Mailbox Transport Delivery
service
Mailbox servers, 207
message routing, 602–603,
603
Mailbox Transport Submission
service
Mailbox servers, 207
message routing, 602, 604
Mailbox Usage page, 348, 435
MailboxDatabase noun, 105
mailboxes, 339, 486
archive quotas, 474
assigning
EMS for, 343–345
to multiple users, 343
bulk manipulation, 376–378
content, 378–380
DAGs, 518, 518
databases. See mailbox
databases
deleting, 372–374
disk drive requirements,
230–231
growth control, 12–13
in-place holds, 475
litigation holds, 475–479,
477–479
moving, 360–361
EAC for, 361–364, 362–363
EMS for, 277–279, 364–369,
376–377
MRM. See messaging records
management (MRM)
permissions, 343–346, 344
processor requirements, 220,
222
role, 32–33, 33
services, 207–208
transitions, 269–270
transport services, 204
troubleshooting, 678–682
Unified Messaging servers,
205
Windows, 232–234
Mailbox Settings page for
assignments, 342–343
Mailbox Transport Delivery
service
Mailbox servers, 207
message routing, 602–603,
603
Mailbox Transport Submission
service
Mailbox servers, 207
message routing, 602, 604
Mailbox Usage page, 348, 435
MailboxDatabase noun, 105
mailboxes, 339, 486
archive quotas, 474
assigning
EMS for, 343–345
to multiple users, 343
bulk manipulation, 376–378
content, 378–380
DAGs, 518, 518
databases. See mailbox
databases
deleting, 372–374
disk drive requirements,
230–231
growth control, 12–13
in-place holds, 475
litigation holds, 475–479,
477–479
moving, 360–361
EAC for, 361–364, 362–363
EMS for, 277–279, 364–369, 376–377
MRM. See messaging records
management (MRM)
permissions, 343–346, 344
processor requirements, 220,
222
role, 32–33, 33
services, 207–208
transitions, 269–270
transport services, 204
troubleshooting, 678–682
Unified Messaging servers,
205
Windows, 232–234
Mailbox Settings page for
assignments, 342–343
Mailbox Transport Delivery
service
Mailbox servers, 207
message routing, 602–603,
poison, 680
properties
EAC for, 347–352,
348–350, 352
EMS for, 352–360
public folders
managing, 433–435, 434
vs. shared mailboxes,
452–453
purging, 373–374
receive connectors, 607,
607–608
reconnecting, 374–375, 374
recovery issues, 697, 699
resource. See resource
mailboxes
retention holds, 472
scripting accounts, 377–378
servers, 12
statistics, 366–372
MailboxServer noun, 105
MailContact noun, 105
MailUser noun, 105
maintenance
downtime for, 19–21
lab environments, 183
mailbox, 498
Maintenance Schedule setting,
498
malware. See anti-spam/
anti-malware tools
Malware Detection Response
settings, 628
Malware Protection Settings
screen, 251
Manage Database Availability
Group Membership window,
515
Manage Diagnostic Logging
Properties Wizard, 675
Manage stage in MOF, 64
Managed Folder Assistant,
386–387
managed folders, 379–381
Managed Store, 38–39
management frameworks, 62–63
ITIL, 63–64
MOF, 64–65, 64
management roles in RBAC, 286,
291
assignments, 287, 292
terminal, 287, 291
management, 297–298
management scope, 292–293
Management Shell for Active
Directory tool, 25
management tools
EAC. See Exchange
Administration Center
(EAC)
EMS. See Exchange
Management Shell (EMS)
migrating, 274–275
mandatory parameters, 108
manual installation, 250
Mark As Past Retention Limit
option, 468
Marsh & McLennan, 456
Master option, 498
Master Type option, 498
Maximum Confidence Level
rule, 659
Maximum Count rule, 658
Maximum Item Size (MB)
setting, 435, 438
MaxReceiveSize property
distribution groups, 402
/mdbname option, 253
Member Of setting for public
folders, 438
Members setting for
mail-enabled groups, 392
membership in mail-enabled
groups, 403–405, 403–404
memory
Client Access server, 550
Mailbox servers, 205–206,
206
requirements, 223–225
server sizing, 178, 178
virtualization requirements,
91, 95
merge-publicfoldermailbox.ps1
script, 446
Merrill Lynch, 456
message classifications, 640–642,
642
creating and modifying, 643
deploying, 643–645
exporting and importing,
644–645
out-of-sync, 644
overview, 46–47
Message Count option, 685
Message Delivery Restrictions
settings
message size, 351, 352
public folders, 439
Message Flow settings for public
folders, 439, 440
Message page, 685
message routing
basics, 600–604, 601, 603
Client Access servers, 210,
210
FET, 594–595
transport. See Transport
services
troubleshooting, 636–637
in upgrade strategies, 265
Message Size restrictions
settings, 396
distribution groups, 351
public folders, 439
Message Source Name setting,
685
message tracking, 686
disk drive requirements, 228
EAC for, 687–688, 687
EMS for, 688
disk drive requirements, 228
self-service, 686–688, 686
Message Tracking Results page,
688
MessageLatencyTime property,
683
messages. See also email
overview
journaling. See journaling
mailboxes. See mailboxes
security. See mailboxes
size. See size
transport rules. See transport
rules
MessageSizeOver parameter, 649
messaging records management (MRM)
basics, 378–380
default folders, 380–381
enabling, 386–387
licensing, 379
policies, 467
retention policies, 383–387, 384–385
retention tags, 381–383
scenarios, 380
user participation, 379–380
messaging servers, 4–5
Microsoft Exchange Customer Experience Program, 249
Microsoft Filter Pack, 185–186
Microsoft Management Console program (mmc.exe), 244
Microsoft Online Crash Analysis program, 249
Microsoft Operations Framework (MOF)
description, 62
overview, 64–65, 64
monitoring
event logs, 675–676
message tracking. See message tracking tasks, 17
Mount cmdlet verb, 105
Mount-Database cmdlet, 496
Move cmdlet verb, 105
Move-ActiveMailboxDatabase cmdlet, 526
Move Configuration page, 361, 362
Move-DatabasePath cmdlet, 496, 707
Move-MailboxDatabase cmdlet, 505
move-publicfolderbranch.ps1 script, 446
Move To Archive option, 381, 468
MoveRequest noun, 106
moving
items between folders, 469
mailbox databases, 496–497
mailbox databases, 360–361
EAC for, 361–364, 362–363
EMS for, 277–279, 364–369
public folders, 431–433
Microsoft Exchange Customer Experience Program, 249
Microsoft Filter Pack, 185–186
Microsoft Management Console program (mmc.exe), 244
Microsoft Online Crash Analysis program, 249
Microsoft Security Advisory Package, 233
migration, 259
dashboard, 363–364, 363
description, 260
EDA, 281
importing PST data, 279–280
management tools, 274–275
moving mailboxes, 277–279
on-premises, 273–277
preparing for, 277
process, 263–271
removing legacy servers, 280–281
resource mailboxes, 425–426
Minimum Confidence Level rule, 659
Minimum Count rule, 658
mirrored drives, 73
mirroring plus striping configuration, 74
mobile scenario
Autodiscover, 556
virtualization, 100
mobility of mailbox databases, 41–42
/mode option, 252, 254–255
moderation of distribution groups, 397–398
ModerationEnabled property, 402
Modified setting, 498
MOF (Microsoft Operations Framework)
description, 62
overview, 64–65
names
Autodiscover certificates, 167–168
DAGs, 514
databases, 496
mail-enabled groups, 390–391
message classifications, 641
organizations, 189, 190, 247
public folders, 448, 448
servers, 231
namespace planning for Client Access servers, 567–572, 568
NAS (network-attached storage), 70
National Archives and Records Administration (NARA) regulations, 460
-ne operator, 112
.NET Framework 4.5, 232
netstat command, 210, 210
network availability, 67–68
network-attached storage (NAS), 70
network dependencies in
disaster recovery, 59
Network File System (NFS), 92
network interface cards (NICs)
DAGs, 518–519
virtualization, 91–92
Network Load Balancing (NLB), 573
Network Settings page, 618
networks
Client Access servers, 550, 565, 566
DAGs, 518–520, 518–519
perimeter, 34, 35, 211
server hardware
requirements, 225–226
server sizing, 179
in virtualization, 91–92
New Accepted Domain window, 330, 330, 620, 621
New cmdlet verb, 105
New-AcceptedDomain cmdlet, 194, 331–332, 621
New-ClassificationRuleCollection
 cmdlet, 658
New Database screen, 495–496, 495
New-DatabaseAvailabilityGroup
 cmdlet, 515
New-DatabaseAvailability
 GroupNetwork cmdlet, 520
New Distribution Group
 window, 391–392, 392
New-DistributionGroup cmdlet, 198, 400–401
New-DlpPolicy cmdlet, 663
New Dynamic Distribution
Group window, 393–395, 394
New-DynamicDistributionGroup
 cmdlet, 395, 401, 403
New Email Address Policy
wizard, 334–336, 335
New-EmailAddressPolicy
 cmdlet, 195, 333
New Exchange Certificate
wizard, 169–170, 169–170, 590, 591
New-ExchangeCertificate
 cmdlet, 170–172, 592
New Group window, 391
New In-Place Discovery & Hold
dialog, 715, 717
New Journal Rule wizard, 665
New-JournalRule cmdlet, 665
New Local Mailbox Move
 wizard, 361, 362
New Mail Contact window,
407–408, 408
New-Mailbox cmdlet
folders, 432, 435
parameters, 108
passwords, 347
resource accounts, 414
retention policies, 384
New Mailbox Policy page, 384
New Mailbox wizard
mailbox assignments,
340–343, 341
resource mailboxes, 415
settings, 342–343
New-MailboxDatabase cmdlet,
496
New-MailboxExportRequest
 cmdlet, 718
New-MailboxImportRequest
 cmdlet, 275, 279, 298
New-MailboxRestoreRequest
 cmdlet, 710
New-MailboxSearch cmdlet,
476
New-MailContact cmdlet, 198,
409–410
New-MailUser cmdlet, 408–409
New-MalwareFilterPolicy
 cmdlet, 627
New-ManagementRole cmdlet,
291, 301
New-ManagementRole
 Assignment cmdlet, 279, 292,
314–315, 345
New-ManagementScope cmdlet,
292, 307–308
New-MessageClassification
 cmdlet, 643
New Migration Endpoint
Wizard, 364
New-MigrationBatch cmdlet, 270,
274, 365
New-MoveRequest cmdlet, 270,
360–361, 364–365
migration, 274, 277–278
user accounts, 278
New-PowerShellVirtualDirectory
 cmdlet, 551
New Public Folder screen, 435, 436
New-PublicFolder cmdlet, 444
New-PublicFolderMigration
 Request cmdlet, 432
New-PublicFolderMoveRequest
 cmdlet, 443
New-RejectConnector cmdlet,
612
New-RemoteDomain cmdlet,
622
New Retention Policy Wizard,
384, 384
New-RetentionPolicy cmdlet, 384
New-RetentionPolicyTag cmdlet,
383
New-RoleAssignmentPolicy
 cmdlet, 292, 319
New-RoleGroup cmdlet, 292, 315
New Room Mailbox wizard,
414–415
New Rule window, 651, 652
New Send Connector window,
617–618, 617
New-SendConnector cmdlet,
196, 618
New-TestCasesConnectivityUser.
ps1 script, 551
New Transport Rules Wizard,
653
New-TransportRule cmdlet, 654,
664
New User Mailbox screen, 343, 346
New User window, 408
/NewProvisionedServer option,
256
Next Hop Domain option, 684
Next Retry Time option, 685
NFS (Network File System), 92
NICs (network interface cards)
DAGs, 518–519
virtualization, 91–92
NLB (Network Load Balancing), 573
not equals operator, 112
Notifications settings, 628
NotifySender action, 650
-notlike operator, 112
nouns in PowerShell, 104–106
nsExchRoleEntries attribute, 297

O
OABs (offline address books)
clients, 501
location, 152
mailbox databases, 193
objectClass property, 154
objects in PowerShell, 111, 111
off-premise disaster recovery
solutions, 61–62
offboarding in Office 365, 271
Office 365
coexistence, 272–273
educational environments, 263
hybrid deployments, 262
journaling, 666
options, 271–272
overview, 271
offline access, 475
Offline Address Book setting, 501
offline address books (OABs)
clients, 501
location, 152
mailbox databases, 193
Offlines Storage Tables (OST)
file, 475
out-of-sync classifications, 644
outbound proxies in FET, 595
Outbound Proxy Receive
connectors, 606
Outlook
Calendar, 7, 7–8
importing classifications in, 644–645
profiles in upgrade strategies, 265
public folders
creating, 447–449, 447–448
permissions, 451–452, 452
Outlook Anywhere
Autodiscover settings, 152
Client Access coexistence, 580, 580, 586–587
Client Access servers,
561–563, 562
Outlook Web Access (OWA)
Client Access coexistence, 575, 575–576, 581, 581–582
Client Access servers,
209–210, 551–554, 553–554
and EAC, 571
message classifications,
641–642, 642
on-premise coexistence, 270
proxying, 569–571
redirection, 572
testing, 198
Owners setting for mail-enabled
groups, 391

P
page patching, 539–540
PAM (Primary Active Manager)
role, 530, 531
parameters for cmdlets, 108–109
Parameters option for cmdlet
help, 135
parity drives, 73–74
Partner Send connector type, 617
Pascal casing, 104
pass-through disks, 85
Passive Clustered Mailboxes, 204
passwords, user, 347
patches, 19
improvements, 30–31
page, 539–540
paths
certificate, 588, 588
mailbox databases, 496–497
Patriot Act, 460
performance-bound servers, 13
Performance Monitor, 219
perimeter networks
Client Access servers, 211
Edge Transport services, 34, 35
Permanently Delete option, 381, 468
permissions
Availability service, 564
installation and preparation, 237
legacy, 243
mailboxes, 341, 343–345, 344
New-MoveRequest, 279
public folders, 446, 451–452, 452
RBAC, 322–323
unscoped top-level roles, 302
Permissions page
  Availability service, 564
  public folders, 451–452, 452
Person or Department
  Responsible for the Policy setting, 457
personal email archiving, 466
personal folders, 13–14, 279–280
personal tags, 467
Phone And Voice Features
  settings, 351
pipe symbol (|) for output direction, 124–125
plan A2, 263
Plan stage in MOF, 64
play down of log files, 527
Play On Phone option, 36
poison mailboxes, 680
policies
  ActiveSync, 49, 49
  anti-malware, 627–629, 628
  DLP
    creating, 660–664, 661–663
    overview, 655–660, 657–659
e-mail addresses, 329,
  331–332, 331
  changing, 332–333
  creating, 333–336, 335–336
  mailboxes, 349
  public folders, 435, 438
  SMTP domains, 194–195
email archiving, 467–471, 470
  retention
    description, 45
    details, 456–457, 464–465
    managing, 383–387, 384–385
    settings, 350
  role assignment, 287, 317–319
Policy Tips window, 662, 662
POP3 (Post Office Protocol)
  Client Access servers, 563–564
  proxy servers with, 569
POP3 Backend service
  Client Access servers, 212
  Mailbox servers, 207
ports in FET, 593, 593
Post In This Folder option, 448
post installation configuration, 193
  configuration testing, 196
  external mail flow, 195–196
  mailbox databases, 193
  OWA testing, 198
  product keys, 198
  SMTP domains, 194–195
  SSL certificates, 197
Post Office Protocol (POP3)
  Client Access servers, 563–564
  proxy servers with, 569
postmaster addresses, 199
power requirements and virtualization, 89
PowerGUI tool, 25
PowerShell, 24. See also Exchange Management Shell (EMS)
  aliases, 110–111
  archive quotas, 474
  benefits, 103–104
  cmdlets vs. commands, 107
  command syntax, 104
  debugging and troubleshooting from,
  132–133
  email archiving, 472
  help, 106, 133–147, 134, 147
  -Identity parameter, 106–107
  object orientation, 111, 111
  output, 111
    directing, 123–125
    example, 130
    to files, 129–130
    filtering, 111–124
    formatting, 122–123, 123
    lists and tables, 126–127
    managing, 125–126
    sorting and grouping, 128–129
  parameters, 108–109
  PowerShell v3, 125
  remote, 125, 550–551
  scripts, 130–132
  Tab completion, 110
  tips, 146–147, 147
verbs and nouns, 104–106
predefined scopes, 306
Premium browsers, 555
premium journaling, 664
/PrepareAD option, 247–248
/PrepareAllDomains option, 248
/PrepareDomain option, 248
/PrepareSchema option, 245
PriceWaterhouseCoopers, 456
Primary Active Manager (PAM) role, 530, 531
Primary Mailbox folder, 718
Primary messages in shadow redundancy, 624
Primary servers in shadow redundancy, 624
priorities in email archive policies, 468
private keys in Autodiscover, 164
PrivateKeyExportable parameter, 172
processors
  Client Access server, 549
  requirements, 29–30
  combined function servers, 213
  servers, 220–224, 221
  virtualization, 91
profiles
  I/O, 226–228
  Outlook, 265
programming interfaces, 47–48
Progress screen in installation, 191
Prohibit Post at (MB) setting, 435–436
Prohibit Send And Receive setting, 229
Prohibit Send And Receive At (KB) setting, 499
Prohibit Send At (KB) limit setting, 499
Prohibit Send size warning, 229
project plans for PST files, 463
Promodag Reports tool, 219
providing support for, 22–23
properties
administrators, 442
default servers, 442
EMS for, 445
EMS for, 442–447
hierarchy, 449
high availability, 450–451
limitations, 430–431
mail-enabled, 328
mailbox management, 433–435, 434
Mailbox servers, 204
vs. mailboxes, 452–453
managing, 435–442, 436–441
moving, 431–433, 431–432
Outlook, 447–449, 447–448
OWA, 552
permissions, 446, 451–452, 452
properties, 436–441, 436–441
scripts, 446–447
support, 429–431
Public Key property, 166
public keys
Autodiscover, 164
X.509 certificates, 166
PublicFolderToMailboxMap Generator.ps1 script, 446
Purges folder, 711–713
purging mailboxes, 373–374
Purpose of the Policy/Policy Statement, 457
Q
Quarantine messages that meet or exceed a specific SCL threshold option, 631
Quest Software, 25
Queue ID setting, 685
Queue Viewer, 684–685, 684
Queues page, 684–685
quick start guide, 177
installation. See installation recipients, 197–199
server sizing, 177–181, 178
Windows configuration, 183–186, 184
quorums in DAG, 511–512
quotas
email archiving, 474
mailbox databases, 499, 500, 504
quotes (‘’“) in cmdlets, 107
R
RAID (Redundant Array of Inexpensive Disks), 72–75
RAM. See memory raw disk mapping (RDM), 85
RBAC. See role-based access control (RBAC)
RBAC Manager, 293–294, 293
RBL (real-time block list) providers, 613
RCA. See Remote Connectivity Analyzer tool (RCA)
RDB (Recovery Database), 710–711
RDM (raw disk mapping), 85
Readiness Checks, 190–191, 191
reading journal reports, 667
real-time block list (RBL) providers, 613
Receive connectors, 196
creating, 612–613
overview, 606–612, 607–608
ReceiveConnector noun, 106
receiving email, 604–606
recipient filtering, 633
recipient scope for roles, 303–304
Recipient Update Service (RUS), 329
RecipientRoot parameter, 307
recipients, 325
contacts
EAC for, 407–409, 408
EMS for, 409–410
e-mail addresses. See e-mail addresses
journal, 665
mail-enabled contacts, 326–327
mail-enabled groups, 327–328
mail-enabled public folders, 328
mail-enabled users, 326–327
mailbox-enabled users, 325–326
mailbox migration, 363
management tasks, 17
in message classifications, 641
postmaster addresses, 199
Recipients page, 363
RecipientType property, 415–416
RecipientTypeDetails property, 415–416
recipients
contacts
EAC for, 407–409, 408
EMS for, 409–410
e-mail addresses. See e-mail addresses
journal, 665
mail-enabled contacts, 326–327
mail-enabled groups, 327–328
mail-enabled public folders, 328
mail-enabled users, 326–327
mailbox-enabled users, 325–326
mailbox migration, 363
management tasks, 17
in message classifications, 641
postmaster addresses, 199
Recipients page, 363
RecipientType property, 415–416
RecipientTypeDetails property, 415–416
reconnecting deleted mailboxes, 374–375, 374
records management.
See messaging records management (MRM)
Recover Deleted Items tool, 501, 704, 711
Recover To Original Location option, 705
Recoverable Items folder, 713, 718
recovery, 56, 58–59. See also backups
vs. business continuity, 59–60
command-line options, 255–256
dial tone, 711
disconnected mailboxes, 708–709
effect, 704
email archiving for, 458–459
total server, 718–720
goals, 697–698
vs. high availability, 69
mailbox database, 705–707, 706
off-premise solutions, 61–62
on-premise solutions, 60–61
practicing, 697
preparing for, 700
recovery database, 710–711
single messages, 711–718, 712, 716–717
Recovery Database (RDB), 710–711
Recovery Point Objective (RPO), 57, 492, 698
recovery process, 57
Recovery Storage Group, 710
Recovery Time Objective (RTO), 57, 697
Recovery Time Objective/
Recovery Point Objective (RTO/RPO), 492
redirection in Client Access server, 571–572
redundancy
in high availability, 66
shadow, 624–625
Redundant Array of Inexpensive
Disks (RAID), 72–75
Registry for message
classifications, 645
regulations
email archiving, 459–461, 465
e-mail retention policies, 457, 465
Reject messages that meet
or exceed a specific SCL
threshold option, 631
release notes, 21
Remote Connectivity Analyzer tool (RCA)
benefits, 24, 24
external clients, 691
external connectivity, 162
Office 365, 273
spam lookup, 613
remote domains, 622–623
remote managed services, 61
remote office situations in
virtualization, 97–98
remote PowerShell, 125, 550–551
Remote Procedure Calls (RPCs), 561–563, 562
Remove cmdlet verb, 105
Remove-AcceptedDomain
cmdlet, 331, 621
Remove-ADPermission cmdlet, 346
Remove-DatabaseAvailability
Group cmdlet, 515
Remove-DatabaseAvailability
GroupNetwork cmdlet, 520
Remove-DatabaseAvailability
GroupServer cmdlet, 516, 720
Remove-Distribution
Group cmdlet, 400, 402
Remove-Distribution
GroupMember cmdlet, 401
Remove-DlpPolicy cmdlet, 663
Remove-Dynamic
DistributionGroup cmdlet, 401
Remove-EmailAddressPolicy
cmdlet, 333
Remove-Mailbox cmdlet
archive mailboxes, 474
disconnected mailboxes, 709
public folder mailboxes, 445
public folders, 435
user accounts, 373
Remove-MailboxDatabaseCopy
cmdlet, 525, 720
Remove-MailboxImportRequest
cmdlet, 279
Remove-MailContact cmdlet, 409
Remove-MailUser cmdlet, 409
Remove-ManagementRole
cmdlet, 291, 301
Remove-ManagementRole
Assignment cmdlet, 292
Remove-ManagementRoleEntry
cmdlet, 291, 301–302
Remove-ManagementScope, 292
Remove-MoveRequest cmdlet,
361, 369–370
Remove option for mailboxes, 373
Remove-PowerShellVirtual
Directory cmdlet, 551
Remove-PublicFolder cmdlet, 444
Remove-PublicFolderClient
Permission cmdlet, 446
Remove-RoleAssignmentPolicy
cmdlet, 292
Remove-RoleGroup cmdlet, 292
Remove-RoleGroupMember
cmdlet, 292
Remove-TransportRule cmdlet, 654
/RemoveProvisionedServer
option, 256
/RemoveUmLanguagePack
option, 257
RemoveUserFromPFRecursive.
ps1 script, 447
RemoveUserPermissionOn
PFRecursive.ps1 script, 447
removing
legacy servers, 280–281
retention tags, 471
ReplaceUserWithUserOn
PFRecursive.ps1 script, 447
Replay Lag Time (Days) setting, 523
ReplayLagTime setting, 626
replication, 508
file mode vs. block mode,
508–509
in high availability, 66
replication health, 680–682
Replication Service, 40, 208
Reply To addresses, 349, 396
replicants
journal, 667
preparing, 18
ReportSeverityLevel action, 650
reputation of senders, 635–636
requestors in VSS, 696
Require That All Senders Are Authenticated option, 352
Require TLS Encryption option, 619, 619
requirements, 217–218
Active Directory, 236–237
Client Access server, 548–550
coeexistence, 237–238
disks. See disk drives
factors, 218
hardware, 260–261
hybrid deployments, 262–263
legacy servers, 262
memory, 223–225
network, 225–226
operating systems, 231
processors, 220–224, 221
roles and features, 232–236, 235
typical users, 219–220
upgrades, 260–263
virtualization, 90–93
reseed process in DAG, 528–529, 529
resiliency
DAC, 540–541
overview, 539
page patching, 539–540
scenarios, 542–545, 542–544
Resource in-policy requests
features, 422
resource mailboxes
description, 413
features, 414, 416–418, 417
migrating, 425–426
properties, 414–416, 415–416
scheduling policies, 418
automatic processing, 425
with EAC, 418–422
with EMS, 422–424
Resource out-of-policy requests
features, 422
ResourceCapacity property, 415–416
ResourceCustom property, 415–417
resources in virtualization, 91
ResourceType property, 415–416
Responsibilities section in email
retention policies, 457
Restore-DatabaseAvailability
Group cmdlet, 516
-ResultSize parameter, 109
Resume-MailboxDatabaseCopy
cmdlet, 525
Resume-MailboxImportRequest
cmdlet, 279
Resume-
PublicFolderMigrationRequest
cmdlet, 433
Resume-
PublicFolderMoveRequest
cmdlet, 443
retention holds, 472
Retention pillar in DCAR
framework, 78–79
retention policies
description, 45
details, 456–457, 464–465
managing, 383–387, 384–385
settings, 350
retention policy tags (RPTs)
creating, 381–383, 382–383
default folders, 467–469
Deleted Items folder,
382–383, 383
setting, 469–471, 470
Rights Management Services
(RMS), 47
role assignments, 287, 292, 350
role-based access control (RBAC),
44, 285
for administrators, 287–288, 288
auditing, 320–323, 321
EAC for, 289–290, 289–290, 320, 321
EMS for, 291–293, 321–322
for end users, 288, 289
previous versions, 285–286
process, 286–287
RBAC Manager, 293–294, 293
roles. See roles
roles
administrator
adding, 311–314, 312–313
assignment process,
309–311, 309–311, 315
groups, 314–315
choosing, 297–299
components, 294–297, 295–297
customizing, 299–302, 300
distributing, 303
administrators, 309–315
end users, 315–319, 316, 318
scope, 303–308
entries, 286
groups, 287, 291–292
installation order, 251, 269–270
server. See server roles
virtualization, 96
/roles option in setup.com, 254
Room mailboxes, 413
round-robin mechanism, 66, 68
Routable DAG delivery group, 602
RouteMessageOutbound
RequireTLS action, 650
routing, message. See message
routing
RPC Client Access service, 208
RpcClientAccessServer
parameter, 539
RPCs (Remote Procedure Calls),
561–563, 562
RPO (Recovery Point Objective),
57, 492, 698
RPTs (retention policy tags)
creating, 381–383, 382–383
default folders, 467–469
Deleted Items folder,
382–383, 383
setting, 469–471, 470
RTO (Recovery Time Objective),
57, 697
RTO/RPO (Recovery Time
Objective/Recovery Point
Objective), 492
rules
DLP policy, 656–659, 657–658
email archiving, 459–460, 465
transport. See transport rules
running scripts, 130–132
RUS (Recipient Update Service), 329

S
S/MIME in OWA, 553
SafetyNet Holdtime setting, 625–626
SAN (Subject Alternative Name) certificates, 163, 589, 590
SANs (storage area networks) description, 70–71
disk drive allocation, 494
overview, 76–77
SAR (Standby Active Manager) role, 530, 531
SAM (Standby Active Manager) role, 530, 531
SANs (storage area networks) description, 70–71
disk drive allocation, 494
overview, 76–77
Sarbanes-Oxley Act (SOX), 459
SATA (Serial Advanced Technology Attachment) storage, 480
scaling to dedicated servers, 223
server roles, 214–215
Scan Email Sent Outside - High Count rule, 658
Scan Email Sent Outside - Low Count rule, 657–658
Scan Text Limit Exceeded rule, 658
schedules backups, 698–699
downtime, 19–21
mailbox database maintenance, 498
mailbox resources, 418
EAC for, 418–422, 419
EMS for, 422–424
scripts, 132
warning messages, 501
Schema Management console, 244
Schema Masters, 244–245, 244
schemas in Active Directory, 243–245, 244
SCL (Spam Confidence Level), 630–631
SCL Junk Threshold setting, 631
Scope/Coverage setting, 457
scopes, 287, 303
custom, 306–308, 307
inherited, 303–305
journaling, 665
management, 292–293
predefined, 306
RBAC, 287
SCPs (service connection points), 151–155, 556–557, 558
SCRs (service connection replication), 39
scripts public folders, 446–447
running, 130–132
scheduling, 132
user accounts, 377–378
Search-AdminAuditLog cmdlet, 321
Search Extension for Windows Server Backup service, 208
Search Host Controller service, 208
Search-Mailbox cmdlet, 476, 718
Search Query page, 478, 715, 716
Search service, 208
searches archives, 45
eDiscovery, 476–479, 477–479, 715, 717
SEC Rule 17a-3 and a-4, 459
Secure Guessmart Authentication option, 157
Secure Socket Layer (SSL) protocol
Autodiscover, 156
certificates, 197
security daily tasks, 16
email flow, 618–619, 619
improved, 49
journaling, 665–666
SSL, 156, 197
security groups, 328, 390
Seeding Postponed option, 523
Select Application screen, 705
Select Backup Configuration screen, 702–703
Select Backup Destination screen, 703
Select Backup Items screen, 702
Select Backup Time screen, 703
Select cmdlet, 129
Select Destination Disk screen, 703–704
Select Items for Backup screen, 703
Select Members dialog, 314
Select Moderation Notifications settings, 398
Select-Object cmdlet, 129
Send-As permissions, 346–345, 438
send connectors, 196
creating, 617–618, 617
on-premise coexistence, 271
overview, 614–617, 615
Send On Behalf Of permission, 344
assigning, 346
custom, 438
SendConnector noun, 106
Senders Who Don’t Require Message Approval list, 398
sensitive information protection. See Data Loss Prevention (DLP)
Serial Advanced Technology Attachment (SATA) storage, 480
Serial Number property, 166
server affinity, 572–573
Server Manager, 700
Server Message Block (SMB), 92
Server Role Selection screen, 188, 189, 249, 250
server roles
   Client Access. See Client Access servers
combined function, 213
configurations, 213–215
Edge Transport. See Edge Transport servers
Hub Transport. See Hub Transport servers
install in, 251
Mailbox. See Mailbox servers
overview, 31–34, 32–33
roles, 201–203, 201
scaling, 214–215
Unified Messaging. See
Unified Messaging servers
Server Virtualized Validation
Program (SVVP), 86, 93
ServerList parameter, 307
ServerRestrictionFilter parameter, 307
servers
   Autodiscover benefits, 153
   in email archiving, 480–481
   names, 231
   recovery issues. See recovery redundancy, 66, 72–75, 624–625
   requirements, 217–218
   roles. See server roles
   sizing, 177–181, 178
   virtualization, 93
   Windows, 232–236, 235
service connection points (SCPs), 151–155, 556–557, 558
Service Design text, 63
Service Host service
   Client Access servers, 212
   Mailbox servers, 208
service location (SRV) records, 151, 156–157
Service Operation text, 63
service packs, 19, 30–31
Service Strategy text, 63
Service Transition text, 63
serviceBindingInformation property, 155
serviceClassName property, 154–155
services
   availability, 67
   Client Access servers, 212
   Edge Transport servers, 34–35, 35
   health, 677–678, 677
   ITIL, 63
   Mailbox servers, 207–208
   Services node for Autodiscover certificates, 171, 171
Set cmdlet verb, 105
Set-AcceptedDomain cmdlet, 194, 331, 621
Set-ActiveSyncVirtualDirectory cmdlet, 570, 691
Set As Reply addresses, 349
Set-CalendarProcessing cmdlet, 422–423, 425
Set-CasMailbox cmdlet, 352, 359–360, 376
Set-ClientAccessServer cmdlet, 162–163, 574
Set-Content cmdlet, 172
Set-DatabaseAvailabilityGroup cmdlet
   DAC, 541
   DAG creation, 515
   DAG management, 520
   lagged mailbox database copies, 527–528
   replication, 508
Set-DatabaseAvailabilityGroupNetwork cmdlet, 520
Set-DistributionGroup cmdlet
description, 400–401
exceptions, 402
mail-enabled groups, 396–397
Set-DlpPolicy cmdlet, 663
Set-DynamicDistributionGroup cmdlet, 401, 403
Set-EcpVirtualDirectory cmdlet, 570
Set-EmailAddressPolicy cmdlet, 333
Set-EventLogLevel cmdlet, 674–675
Set-ExchangeServer cmdlet, 198
Set-FrontEndTransportService cmdlet, 637
Set-Group cmdlet, 399–400
Set-Location cmdlet, 110
Set-Mailbox cmdlet
   access to, 286
   archive quotas, 474
   bulk manipulation, 377
   dial tone recovery, 711
   in-place holds, 475
   mailbox properties, 352, 355–356
   permissions, 346
   properties, 112–116
public folders, 435
resource mailboxes, 418, 425–426
recovery items, 713–715
resource mailboxes, 418, 425–426
recovery items, 713–715
resource mailboxes, 418, 425–426
Set-MailboxCalendar Configuration cmdlet, 424
Set-MailboxDatabase cmdlet
   DAGs, 516
   mailbox assignments, 342
   mailbox retention, 707, 709
   OAB, 193
   quotas, 504
Set-MailboxDatabaseCopy cmdlet, 526–527
Set-MailboxImportRequest cmdlet, 279
Set-MailboxServer cmdlet, 515, 526
Set-MailContact cmdlet, 409
Set-MailPublicFolder cmdlet, 445
Set-MailUser cmdlet, 409
Set-MalwareFilteringServer cmdlet, 629–630
Set-ManagementRoleAssignment cmdlet, 292
Set-ManagementRoleEntry cmdlet, 291, 301
Set-ManagementScope, 292
Set-MessageClassification cmdlet, 643
Set-OABVirtualDirectory cmdlet, 570, 691
Set-OrganizationConfig cmdlet, 433, 631
Set-OutlookAnywhere cmdlet, 562, 580
Set-OwaVirtualDirectory cmdlet, 570–571
Set-PowerShellVirtualDirectory cmdlet, 551, 570
Set-PSDebug cmdlet, 132
Set-PublicFolder cmdlet, 444
Set-

PublicFolderMigrationRequest cmdlet, 433
Set-ReceiveConnector cmdlet, 633, 637
Set-ResourceConfig cmdlet, 417
Set-RoleAssignmentPolicy cmdlet, 292, 317
Set-RoleGroup cmdlet, 292
Set-SendConnector cmdlet, 595, 637
Set-TransportConfig cmdlet, 199, 624–625, 666
Set-TransportRule cmdlet, 654
Set-TransportService cmdlet, 637
Set-UMCallRouterSettings cmdlet, 595–596
Set-User cmdlet, 352–355
Set-WebServicesVirtualDirectory cmdlet, 570, 691
Setup Completed screen, 191, 191
setup program

dele gated server installation,

256

GUI installation, 187–192, 188–191, 248–252
shadow redundancy, 624–625
shared mailboxes, 395, 452–453
Sharing Policy setting, 350
shortcuts, command-line, 255
Show All Available Disks dialog, 703, 703
Show Assignment Policies page, 293
Show Management Roles page, 293
Show Management Scopes page, 293
Show Role Groups page, 293
signatures, digital. See certificates
Simple Mail Transfer Protocol (SMTP)
domains, 194–195
email address policies, 332–334, 332
FET, 593–594, 593
receiving email, 605
simplicity in lab environments, 182–183
single-instance storage (SIS), 480
single master replication strategy, 66
single message recovery, 711–718, 712, 716–717
single subnet DAG networks, 518
SIS (single-instance storage), 480
site resiliency
DAG, 540–541
overview, 539
page patching, 539–540
scenarios, 542–545, 542–544
sites

affinity, 162–163
recovery issues, 699
in virtualization, 98–99
64-bit architecture, 29–30
size

DAG databases, 516–517, 517
disk, 490–491
mailbox databases, 491–492
mailboxes, 13
messages, 351, 396, 685
public folders, 450
server, 177–181, 178
Unified Messaging messages, 37
Size (KB) setting, 685
sl cmdlet alias, 110
small office virtualization situations, 97–98
SMTP (Server Message Block), 92
SMTP (Simple Mail Transfer Protocol)
domains, 194–195
email address policies, 332–334, 332
FET, 593–594, 593
receiving email, 605
SMTP E-mail Address dialog, 332–334, 332
software RAID, 75
software requirements, 231
operating systems, 231
virtualization, 93–94
Windows Server roles and features, 232–236, 235
Sort-Object cmdlet, 128
-SortBy parameter, 109
sorting cmdlet output, 128–129
Source Server page, 615, 616
Source setting for diagnostic logging events, 675
/SourceDir option, 254, 257
SOX (Sarbanes-Oxley Act), 459
space impact of virtualization, 88–89
spaces in cmdlets, 107
spam. See anti-spam/anti-malware tools
Spam Confidence Level (SCL), 630–631
Specify Destination screen, 702
Specify Mailboxes To Search option, 715
Specify Recovery Options screen, 705–706
Specify Words Or Phrase window, 336, 336
spell checking in OWA, 553
SPF (Sender Policy Framework), 613–614, 634
split brain syndrome, 540
spoofing, 634–635
SQL Server, 38
SRV (service location) records, 151, 156–157
SSL (Secure Socket Layer) protocol

Autodiscover, 156
Staged Exchange Migration (SEM), 272
standard journaling, 664
Standby Active Manager (SAM) role, 530, 531
standby continuous replication (SCR), 39
Start-DatabaseAvailabilityGroup cmdlet, 516
Start-ManagedFolderAssistant cmdlet, 387
Start-MigrationBatch cmdlet, 365
statistics
mailboxes, 366–372. See also Get-MailboxStatistics cmdlet
public folders, 436, 437
Status setting
mailbox databases, 497
Queue Viewer, 684–685
stickiness, server, 572
Stop-DatabaseAvailabilityGroup cmdlet, 516
Stop Processing More Rules option, 653
StopRuleProcessing action, 650
storage availability
direct attached storage, 71–75
overview, 70–71
storage area networks, 76–77
Client Access server, 550
email archiving. See email archiving
Exchange databases. See Exchange databases improvements, 42–43
mailbox databases. See mailbox databases virtualization requirements, 91
Storage Calculator, 228
storage groups, 492
Storage Quotas dialog, 348–349
strategies
backups, 696–700
upgrades, 263–271
striped drives, 72–73
Stub and Time Based option, 462
stub messages, 462, 464
Subject Alternate Name property, 165–166
Subject Alternative Name (SAN) certificates, 163, 589, 590
Subject Name property, 165
Subject setting for Queue Viewer, 685
Supported browsers in EAC, 555
Suspend-MailboxDatabaseCopy cmdlet, 525
Suspend-MailboxImportRequest cmdlet, 279
Suspend-PublicFolderMigrationRequest cmdlet, 443
Suspend-PublicFolderMoveRequest cmdlet, 443
SVVP (Server Virtualized Validation Program), 86, 93
synchronization
contacts, 327
Office 365, 272
system health, 677, 677
system resources in virtualization, 91
T
Tab completion, 110
tables for cmdlet output, 126–127
tags
e-mail archiving, 467–471
RPTs
creating, 381–383, 382–383
default folders, 467–469
Deleted Items folder, 382–383, 383
setting, 469–471, 470
/TargetDir option, 254, 256
tarpitting, 633–634
Task Category setting, 675
Task Scheduler, 701
tasks, administrative, 16–18
TechNet Events, 676
TechNet forums, 21–22
technical support, 22–23
/TenantOrganizationConfig option, 254
Test cmdlet verb, 105
Test-ActiveSyncConnectivity cmdlet, 678, 693
Test DLP Policy With Policy Tips mode, 656
Test DLP Policy Without Policy Tips mode, 656
Test E-mail Auto Configuration tool, 157–158, 158, 690–691, 690
Test-ImapConnectivity cmdlet, 693
Test-Mailflow cmdlet, 196, 683
Test-MAPIConnectivity cmdlet, 196, 678–680, 682
Test-MigrationServerAvailability cmdlet, 678
Test-OAuthConnectivity cmdlet, 678
Test-OwaConnectivity cmdlet, 693
Test-PopConnectivity cmdlet, 693
Test-PowerShellConnectivity cmdlet, 551
Test-ServiceHealthConnectivity cmdlet, 196, 677–678, 677
Test-SiteMailbox cmdlet, 678
Test-PopConnectivity cmdlet, 678
Test-SystemHealth cmdlet, 677, 677, 682
Test-WebServicesConnectivity cmdlet, 693
testing
backups for, 708
configuration, 196
OWA, 198
virtualization, 97
TestMailflowResult property, 683
TestReplicationHealth cmdlet, 681–682
third-party applications
archive systems, 230
disaster recovery, 59
migrations, 275
third-party enterprise archives,
466–467
This Database Can Be
Overwritten By A Restore
option, 498
Threat Management Gateway
(TMG), 565
tools overview, 23–25
three-column view in OWA,
552
Throttling service for Mailbox
servers, 208
Thumbprint property, 166
tiered roles vs. geographic, 308
time-based option, 462
Tip of the Day text, 146–147, 147
tips in DLP policy, 656–657, 657,
662, 662
Title 17 CFR Part 1, 460
TLS (Transport Layer Security)
protocol
journaling, 665
message routing, 602
opportunistic, 619, 619
Transport Log Search service,
208
transport management
architecture, 640–641
message classifications. See
message classifications
rules. See transport rules
Transport Rule Wizard, 46, 46
transport rules, 619, 619
actions, 649–650, 650
coexisting, 647–648, 648
conditions and exceptions,
648–649, 649
EAC for, 651–653, 652
EMS for, 654–655
overview, 45–46, 46
and server design, 648
setting up, 645–646, 646
types, 640
Transport services, 33, 33
accepted domains, 620–621,
620–621
improvements, 599
Mailbox servers, 204, 208
message routing. See
message routing
receive connectors, 196
creating, 612–613
overview, 606–612,
607–608
receiving email, 604–606
remote domains, 622–623
Safety Net, 625–626
security, 618–619, 619
send connectors
creating, 617–618, 617
overview, 614–617, 615
sending email, 613–614
shadow redundancy,
624–625
spam. See anti-spam/anti-
malware tools
troubleshooting, 636–637
TransportConfig noun, 106
troubleshooting, 671
Autodiscover, 690–692, 690,
692
client connectivity, 689–693,
690, 692
Event Viewer for, 673–676,
675–676
Exchange Best Practices
Analyzer for, 678
with IPv6, 689
mail flow, 682–683
message tracking,
686–688, 686
Queue Viewer for,
684–685, 684
Test-Mailflow for, 683
Mailbox servers, 678–682
downtime for, 19–21
from PowerShell, 132–133
principles, 671–673
routing, 636–637
tasks, 17
Test-ServiceHealth for,
677–678, 677
Test-SystemHealth for, 677,
677
truncation lag time in mailbox
database copies, 526–527
TrustClassifications setting, 645
type cmdlet alias, 110
typical user hardware
requirements, 219–220
U
UAG (Unified Access Gateway),
565
UCE (unsolicited commercial
email). See anti-spam/anti-
malware tools
UK Central Computer and
Telecommunications Agency,
63
UMMailbox noun, 106
undeleting mailboxes, 374–375,
374
Unicode version of PST files,
463
Unified Access Gateway (UAG),
565
Unified Communications
Certificates, 589
Unified Messaging servers, 9
Client Access servers, 211–212, 595–596, 596
description, 31–32
Mailbox servers, 205, 208
on-premise coexistence, 271
overview, 35, 36–37
upgrades, 270
Uninstall-AntispamAgents.ps1
script, 630
universal groups, 398–400, 399
Unscoped Role Management
role, 302
unscoped top-level roles, 302–303
unsolicited commercial email
(UCE). See anti-spam/anti-malware tools
Unsupported browsers in EAC, 555
Update cmdlet verb, 105
Update-EmailAddressPolicy
cmdlet, 195, 333
Update-MailboxDatabaseCopy
cmdlet, 525
Update-MailwareFilteringServer
cmdlet, 627
Update-PublicFolderMailbox
cmdlet, 444
Update-RoleGroupMember
cmdlet, 292
Update-StoreMailboxState
cmdlet, 709
updates, downtime for, 19–21, 20
/UpdatesDir option, 254,
256–257
upgrades, 259
description, 260
Office 365, 271–273
on-premise coexistence, 270–271
prerequisites, 260–263
process, 267–269
role installation order, 269–270
strategies, 263–271
Use Domain Name System
(DNS) “MX” Records To
Route Mail Automatically
option, 618
Use Guessmart option, 157
Use Recommended Settings
option, 249
User Mailbox type, 340
User noun, 106
User Roles page, 289–290,
289, 317
User section, 161
users
accounts
creating, 346–347, 347
migrating, 278–279
scripts, 377–378
in upgrade strategies, 264
communication, 18
EAC for, 555
group membership
management, 403–405,
403–404
mail-enabled, 326–327
mailbox-enabled, 325–326
messaging records
management, 379–380, 379
properties
EAC for, 347–352,
348–350, 352
EMS for, 352–360
retention policies, 384–386,
385
V
Valid From property, 166
Valid To property, 166
-Validate parameter, 109
-ValidateOnly parameter, 133
validating certificates, 166
vendors for server support, 218
-Verbose parameter, 109
verbs in PowerShell, 104–105
verifying backup features,
701–702, 702
Version Routing delivery group,
602
versions, coexistence. See
coeexistence
Versions folder, 713
VHDs (virtual hard disks), 85,
180
View-Only Configuration role,
304
viewing mailbox databases,
494–495
views for cmdlets, 135
VIPs (Virtual IPs), 539
virtual directories, 570
virtual guests, 85, 98
virtual hard disks (VHDs), 85,
180
virtual hosts, 85
Virtual IPs (VIPs), 539
virtualization, 83
complexity impact, 89
effects, 88–89
environment for, 87–88
hardware requirements,
90–93
mobile scenario, 100
operations, 94
overview, 83–84, 84
planning, 95–96
recommendations, 86–87
roles, 96
server sizing, 180
site resilience, 98–99
small office/remote and
branch office situations,
97–98
software requirements,
93–94
space impact, 88–89
terminology, 84–85
testing, 97
voice over IP (VoIP) systems, 36
voicemail, 9
Volume Shadow Copy Service
(VSS) backups, 58, 696, 702–703
VSS Full Backup option,
703
VSV files, 91
**W**

WA ADS (Windows Azure Active Directory Synchronization), 263
Warning Message Interval setting, 499
WBAdmin.exe tool, 700
WEB protocol section, 161
Web services
  APIs, 48
  Client Access coexistence, 576, 578, 584, 584
Weill, Sanford I., 456
WFC (Windows Failover Clustering), 68–69, 509–510
-WhatIf option, 109, 132
Where-Object cmdlet, 355, 495
whitespace estimates, 228
wildcards
  certificates, 156–157, 167–168, 589
  cmdlets, 135
  roles, 298
Windows 7 and Windows 8 management consoles, 235–236, 235
Windows Azure Active Directory Synchronization (WA ADS), 263
Windows configuration, 183–186, 184
Windows Failover Clustering (WFC), 68–69, 509–510
Windows Identity Foundation Extension, 233, 236
Windows Network Load Balancing (WNLB), 68, 573
Windows Server 2008 R2 Service Pack 1, 30
  roles and features, 232–233
Windows Server 2012 roles and features, 233–235
Windows Server Backup, 700–701
  backups
    automated, 703–704, 703
    features, 701–702, 702
    one-time, 702–703
  recovery
    email, 704
mailbox database, 705–707, 706
Windows Software Update Service (WSUS) server, 20
WNLB (Windows Network Load Balancing), 68, 573
Write cmdlet alias, 110
write-once, read-many (WORM) storage, 466
Write-Output cmdlet, 110
writers in VSS, 696
WSUS (Windows Software Update Service) server, 20

**X**

X.509 certificates, 164–167, 165–167
XML files
  Autodiscover, 157–162, 559–561
  copying, 644–645
  output to, 129
  tips, 147
XPROXYTO verb, 595