

Index

A

Abstraction class

- Excel Services Library (ESL) assembly, 72–73
- RangeResult class, 73
- Session class, 72–73

Abstraction of cells, method call abstraction, 76–79

Active Template Library (ATL), 159–60

ActiveX controls, unsupported, 12

Addin

- Custom Web Services, 221, 223–30
- lack of support, 8
- RSS feeds, 245, 247–50

Administrator

- Central Administrator options, 14
- trusted file location sanctioning, 14

AJAX (Asynchronous JavaScript And XML), 401–6

- communication with server, 402–3
- data retrieval from Excel Services, 403–4
- loading to browser, 402
- multiple requests, 404
- part to part (P2) communication, 406–7

- session class, 406
- user state in requests, 404–6

Allow Interactivity, 179

Allow Navigation, 179

API. *See* Excel Web Service API

Arguments, values, writing to cells, 35

Assemblies, UDFs, updating, 134–36

Asynchronous calls, faster UDF, 112–15

Auto-generate Web Part, 179

Automation

- automatic recalc, 61
- UDFs client support, 159–69

B

Base Supported Type Set, 122–23, 125

C

Cache(s), 18–20

- calculations, 19–20
- data, 19
- farm configuration, 133
- global and UDFs, 115–18
- serverwide, 133

Cache(s) (continued)

Cache(s) (continued)

- session-level and UDFs, 115–18
- SQL server UDF, 298, 301–2, 307–8
- static, cleaning up, 133
- UDF class, 132–33
- UDFs client support, 155–56
- user-based, 133
- volatile functions, 19–20
- workbook, 18–19

CachedTable, 307–8

CachedTableCollection, 306–7

Calculate, 62–63

CalculateA1, 63

CalculateWorkbook, 64

Calculation(s), 61–64

- automatic recalc, 61
- caching, 19–20
- entire workbook, 64
- enumeration value, 64
- with Excel References, 63
- failure, warning, 66
- ranges, 62–63
- workbook referencing, 326–28
- workflows, 348–55

CalculationWorkflow, 348–55

CancelRequest, 46–48

Cell(s)

- accessing from workbook, 34
- ranges. *See* Cell ranges
- retrieving. *See* Cell retrieval
- values, writing to, 35, 57–61

Cell ranges

- cells versus ranges, 50

- multi-cell ranges, 50

- range names, supported, 51

- retrieving, 49, 55–56

- setting in workbook, 60–61

- UDFs, receiving and returning, 127–28

- writing to workbook, 59–60

Cell retrieval, 49–56

- cell formatting style, 51–52

- cells versus ranges, 50

- multi-cell ranges, 50

- range names, supported, 51

- range of cells, 49, 54–55

- range of values, 49, 55–56

- single cell, 49, 52–53

- single value, 49, 53–54

CellCollection, 95–96

Central Administrator, configuration options, 13

Class(es)

- abstraction, 72–73

- configuration, 149–55

- constants, 291–92

- Excel Services, 80–83

- exception, 80

- filter, 409–18

- helper, 200–208

- RangeResult, 89–96

- session, 83–89

- status, 66

- support, 66

- topic, 266–71

- See also* specific classes

Client support UDF. See User defined functions (UDFs) client support

Client-side connection, data filter, 397–98, 414–18

ClientSideRtd, 263–66

Clip art, unsupported, 12

Closing workbooks, 36–38

CloseWorkbook, 46

in try/catch block, 38

COM

RTD server, 260–61

UDFs client support, 142–44

Comments, unsupported, 12

Conditions, RSS feed, 242

Configuration application, UDFs client support, 148–49

Configuration class, UDFs client support, 149–55

Connection Manager, viewing connections, 64–65

Constants class, directly parameterized workbooks, 291–92

Controls/forms, unsupported, 12

Cookies, EWA session, 182

Cube functions, purpose of, 57

CUdfAutomation, 159–69

Custom views, unsupported, 12

Custom Web Services, 213–34

connection, 224–26

Create, steps in, 215–18

Excel addin, 221, 223–30

functions of, 213–14

insurance model example, 214–21

Library, coding, 222–23

publishing, 218

task pane, working with, 216–17

topology, illustration of, 219–21

type safety, 219

UDFs generation, 219

updating model, 219

usability example, 218–19

web application, code for, 230–33

web methods metadata, 215

Web Service definition UI, 227–29

Web Service metadata, 226–27

Web Services enumeration, 233

D

Data caches, functions of, 19

Data filter, 393–418

AJAX library, 401–6

client-side connection, 397–98, 414–18

client-side mode, 393

coding, 401–18

EWA session, using, 400–401

EWA use with, 398–400

ExcelDataFilter, 409–18

filter class, 409–18

properties for control of, 409

server-side mode, 393

shared code/server, 409–14

Web Part filter assembly, 407–18

Web Part page, creating, 394–97

DatabaseUdfHelper, 308–10

Debugging, UDFs, 138–40

Delegation, personal data UDFs, 131

Departmental deployment

Departmental deployment, 10

Deployment, 9–10

- departmental, 10
- large scale, 10

Direct linking, 71

Directly parameterized workbooks, 287–95

- ASPX page, coding, 291–95
- coding, 291–95
- constants class, 291–92
- data protection, 290
- EWA loading of, 290
- link parts, 288–89
- modified workbooks, returning, 292–95
- purpose of, 287–88

Disk cache, workbook cache, 19

Dispose code, Excel Services Library (ESL) assembly, 85–87

Document library, workflows, 340–42

DOM (Code Document Object Model), library component, 186

DontFailException, 358–59

E

Embedding live workbooks, Excel Web Access Web Part, 23

Enumerations, extracting, 75

Errors

- API, error codes, list of, 68–70
- opening notebooks, 34
- SoapException, 67
- UDFs, troubleshooting, 136–38

Excel Service(s)

- administration of, 12–13
- API. *See* Excel Web Service API
- caches, 18–20
- deployment, 9–10
- directly parameterized workbooks, 287–95
- Excel Services Library (ESL), 72–97
- Excel Web Access (EWA), 8, 175–82
- file formats, 10
- files, loading, 28–29
- goals of, 5–6
- HTML file project, 419–30
- object model (OM), lack of, 7–8
- reasons for use, 3–5
- RSS (Really Simple Syndication) through, 235–57
- RTD (Real Time Data) server in, 259–85
- sessions, 17–18
- settings, 13–14
- SQL server UDF, 297–317
- trusted file locations, 14
- unsupported features, 10–12, 319
- URLs/URNs, supported, 45
- user defined functions (UDFs), 23, 101–71
- workbook referencing, 319–37
- workflows, 339–68

Excel Services Library (ESL), 72–97

- abstraction class, 72–73
- dispose code, 85–87
- ExcelServices Class, 80–83
- exception class, 80

- namespace, 73
- RangeResult class, 89–96
- refresh, 87–88
- session class, 83–89
- support class, 74–79
- WorkbookData class, 96–97
- Excel Web Access (EWA), 175–82**
 - frame communication, 182
 - Interactivity category, 179
 - named object connection, 180–81
 - parameterized links, 369–75
 - properties of, 177–79
 - session, manipulating, 382–92
 - session cookie, 182
 - SharePoint Web Part pages, use of, 175–77
 - View and Layout category, 179
 - Workbook category, 179
 - workbook connection, 180
 - XLViewer, custom, 376–82
- Excel Web Access Web Part**
 - control and EWA properties, 177–79
 - functions of, 23
- Excel Web Service(s)**
 - Custom Web Services, 213–34
 - Hello World program, 27–41
 - library component, 185–208
 - user interface component, 209–10
- Excel Web Service API, 43–70**
 - cells, retrieving from workbook, 49, 52–53
 - closing workbook, 46
 - error codes, list of, 68–70
 - location of, 43
 - opening workbook, 44–46
 - range of cells, retrieving, 49, 55–56
 - range of values, retrieving, 55–56
 - ranges, numeric coordinates for, 66
 - recalculations, 61–64
 - refresh, 64–65
 - requests, canceling, 46–48
 - retrieving workbooks, 56–57
 - Session ID, getting information on, 48–49
 - SOAPException, 67–68
 - Status class properties, 66
 - values, retrieving, 49, 53–54
 - values, write back to cells, 57–61
 - Visual Studio parameter inconsistencies, 43–44
 - wrapper, functions of, 71–72
- ExcelDataFilter, 409–18**
- ExcelHelper, 206–8**
- ExcelServices**
 - data filter, 402–3
 - Excel Services Library (ESL) assembly, 80–83
- ExcelServicesException, 80**
- ExcelServices.FromSessionId(), 83**
- ExcelServicesHelper, 203–6**
- ExcelServicesInfoProvider, 254**
- ExcelServiceSoap, modifying, 78–79**
- ExcelServices.Open(), 82–83**
- ExcelServicesSession, 406**
- ExcelServicesType, 80–81**
- ExcelWorkbook, 292–95**

Exception class

Exception class

Excel Services Library (ESL) assembly, 80
workflows, 358–59

External workbook references. See Workbook referencing

F

Farms, and information sharing, 133

Feature.xml, 365–66

FeedDescription, 245

FeedItem, 246–47

File formats, supported and unsupported, 10

Filters

EWA connection, 181
See also Data filter

Frames

EWA communication, 182
IFrame, 181–82

Freeze panes, unsupported, 12

Front-end server, Excel Web Service API location, 43

Full snapshot, workbooks, 56

G

GAC (Global Assembly Cache)

loading UDFs on server, 134
UDFs option, 15

GeneratedResult, 195–200

GetCell, 52–53

GetCellA1, 53–54

GetRange, 54–55

GetRangeA1, 55–56

GetRangeA1, overloads of, 88–89

GetSessionInfo, 48–49

GetWorkbook, 57

Global caching, UDFs, 115–18

H

Hello World program, 27–41

address of Web Service, 30–31
cell, accessing from workbook, 34
cells, writing values in, 35
cells used, 27–28
closing session, 36–38
coding, 38–39
opening workbook, 28
server, accessing workbook, 28–29
updating model, 37–38
value, checking accuracy, 36
in VB.NET code, 40–41
workbook, opening, 32–34

Helper class

functions of, 200
library component, 200–208
SQL server UDF, 308–10
workflows, 355–58

HTML

IFrame, 181–82
RSS feed, 236, 240–41

HTML file project, 419–30

coding, 423–29
EWA page, 424

HTML elements, 425–29
 purpose of, 419–22
 UDF assembly, 424
 workbook model, 423

HttpContext, 233

I

ID (identification). See Session ID

IExcelServiceWrapper, 77–78

IItemInforProvider, 246

Images, unsupported, 11

Importing, tools, differences, 71

Ink annotations, unsupported, 12

Install.bat, 367–68

Interactivity category, EWA usage, 179

Internet Explorer, version and EWA, 8

Invocation method call, UDFs client support, 156–59

InvokeWebService, 231–32

IWrapperCredentials, 78–79

J

JavaScript, AJAX library, 401–6

K

Kerberos Constrained Delegation, 131

L

Large scale deployment, 10

Library, Excel Services. See Excel Services Library (ESL)

Library component, 185–208

code generation tools, 186–87
 DOM code generation, 186
 generated results, 195–200
 Helper class, 200–208
 namespace, 185
 parameters, 189
 RSS feeds, 245–47
 UDF assembly, starting process, 189–95
 UDF functionality, adding, 203–6
 UDFs generation, 206–8
 web methods, collection of, 187
 web services, collection of, 187–88
 WinForms application, 209

Loading

load failure, UDF assembly, 136–37
 workbooks, 28–29

Local file, loading UDFs on server, 134

Locale, opening workbook, 45–46

M

Maximum Request Duration, default, 14

Method(s), UDFs assembly, adding to class, 104–5

Method call abstraction, 76–79

Multiple workbooks, generating, workflows, 344–47, 359–65

N

#Name error, UDF assembly, 136

Named objects, EWA connection, 180–81

Namespace

Namespace

- Excel Services Library (ESL) assembly, 73
- library component, 185
- RSS feed, 245
- RTD (Real Time Data) UDF, 277

Native code debugging, 139–40

.NET assemblies, IDFs, management of, 15

Nonservlet Box, 102

Now() volatility, 129

O

Object model (OM), lack in Excel Services, 7–8, 72

OLAP (Online Analytical Processing), and cube functions, 57

OLE objects, embedded, unsupported, 12

OleDbUdfs, 311

OpenWorkbook, 44–46

Out parameters, 72

P

Parameter(s)

- library component, 189
- out, 72
- ParamArrays, 125–27
- regular, 125
- SQL server UDF, 300–301
- UDFs, 125–27

Parameterized EWA links, 369–79

- building, 370–75
- operation of, 369–70

Parameterized workbooks. *See* Directly parameterized workbooks

Part to part (P2) communication

- AJAX library, 406–7
- EWA usage, 179–81

Path, URLs/URNs, supported, 45

Personal data

- impersonation/delegation, 131
- UDFs for, 130–32

Pictures, unsupported, 12

PivotTables, Excel Services support, 11

Programmability interfaces, 21–23

- opening/closing workbook, 21–22
- retrieving whole workbook, 23
- UDF assemblies, 23
- values, getting from workbook, 22
- values, writing to workbook, 22

Programmable key, UDFs client support, 143

Protection/encryption, Excel Services support, 12

Proxy

- open workbook on server, 33
- support class, creating, 74–75
- UDFs, 149

Published items snapshot, workbooks, 56

Publishing

- Custom Web Services project, 218
- RSS feed, 238–40, 249–50

RTD (Real Time Data) server

Q**Query tables, unsupported, 11****R****Rand() volatility, 129****Range(s)**

- calculations, 62–63
- versus cells, 50
- defining, numeric coordinates, 66
- using with UDFs, 111–15
- values, retrieving, 55–56
- See also* Cell ranges

RangeCoordinates, 66**RangeResult class**

- CellCollection, 95–96
- Excel Services Library (ESL) assembly, 89–96
- functions of, 73, 89–91
- operation of, 91–93
- Row, 94–95
- RowCollection, 94
- versioning of, 93–94

Real Time Data

- server. *See* RTD (Real Time Data) server
- UDF. *See* RTD (Real Time Data) UDF

References, UDFs assembly, adding, 102**Refresh, 64–65**

- Excel Services Library (ESL) assembly, 87–88
- overloads of, 87–88

RegAsm.exe, 144**Registration, UDFs client support assembly, 144****Relational database queries. *See* SQL server UDF****ReportGeneratorWorkflow, 359–65****Requests, canceling, 46–48****Return value, of UDF, 124****Row, 94–95****RowCollection, 94****RSS (Really Simple Syndication, 235–57**

- adding item, 238
- authoring feeds, panel for, 247–49
- coding, 245–56
- conditions, adding, 242
- Excel addin, 245, 247–50
- formatting, 240–42
- functions of, 235–36
- HTML code, 236, 240–41
- items, generation of, 248–49
- library component, 245–47
- link elements, 242–43
- lists of feeds, viewing, 244
- new feed, starting, 237
- publishing feed, 238–40, 249–50
- server/Web application, 250–57
- simple feed, XML code, 236
- text portions, information source, 254
- tokens, inserting in text, 248

RssFeed.aspx page, RSS feeds, 251–54**RssManager, 254–56****RTD (Real Time Data) server, 259–85**

- coding, 262–71
- COM based architecture, 260–61
- data push back, 263
- pull and push models, 259

RTD (Real Time Data) server (continued)

RTD (Real Time Data) server (continued)

RtdServer class, 263–66
 startup/shutdown, 263
 Topic class, 266–71
 topic parameters, 260–61
 topics, creating/deleting, 263
 topics, meaning of, 262–63

RTD (Real Time Data) UDF, 273–85

cautions about, 275–76
 coding, 276–85
 collection class, 278–79
 exporting UDFs (RtdUdf), coding, 277–85
 exposure of UDFs, 284–85
 functions of, 273–74
 instances of RTD servers, tracking, 279–83
 operation of, 275
 operation on client/server, 275
 for private feeds, 274
 for shared feeds, 274
 topics, identifying, 277–78
 topics, tracking, 283–84

RTD (Real Time Data), unsupported, 11

RtdServer, 263–66

RtdServer class, 263–66

RtdServerSite, 279–83

RtdServerSiteCollection, 278–79

S

Server(s)

RSS feeds, 250–57
 workbooks, accessing, 28–29

Server Box, 102

Server product, Excel Services as, 5

ServerRtdUdf, 284–85

Service.asmx Web Service, RSS feed publication, 251

Session(s)

closing, 36–38
 cookies, 182
 discarding, 13
 ID. *See* Session ID
 interaction with workbooks, 17–18

Session class

AJAX library, 406
 Excel Services Library (ESL) assembly, 83–89
 functions of, 72–73
 Session ID in, 84–85
 use, examples of, 83–84

Session ID

cell, retrieving from workbook, 34
 getting information on, 48–49
 open sessions, 18
 open workbook, 32
 in session class, 84–85
 timeout, 21
 values, writing in cells, 35

Session level caching, UDFs, 115–18

SetCell, 58

SetCellA1, 59

SetRange, 59–60

SetRangeA1, 60–61

Shapes, unsupported, 11

SharedServices1, 135–36

SharePoint

- Excel Web Access (EWA) support, 8
- on front-end servers, 9
- lists. *See* SQL server UDF
- part to part (P2) communication, 179–81
- and workflows, 366–67

SharePoint Web Parts

- data filter, 393–418
- Excel Web Access (EWA) host, 175–77
- part to part (P2) communication, 179–81

SharePointUdfs, 311–16**Single Sign On (SSO) service, 131****SmartTags, unsupported, 12****SOAP (Simple Object Access Protocol)**

- proxy use, 33
- SOAPException, 34, 67–68

Split windows, unsupported, 12**SQL server UDF, 297–317**

- caching, 298, 301–2, 307–8
- cautions about, 297
- coding, 306–16
- collection class, 306
- data, placing in workbook, 298–99
- functions of, 297–98
- helper class, 308–10
- impersonation of user, 312
- less data problem (#N/A), 299–300
- OLE DB queries, 303
- parameters, adding to query, 300–301
- SharePoint, writing data back, 305–6, 314–16

- SharePoint lists, getting data, 303–5, 311–14
- sharing, reduction of, 298

SqlServerUdfs, 310–11**State, workbook in memory, 17****Status class**

- properties, 66
- two in assembly, 74

SubCodes, error codes, list of, 68–70**Support class**

- creating, 74–75
- Excel Services Library (ESL) assembly, 74–79
- extracting, 75–76
- ranges, numeric coordinates, 66
- warnings, Status class, 66

System.CodeDom, 186**T****TaskException, 359****Templates, workbooks and session, 17****Text queries, unsupported, 12****Thread safety**

- common issues, 128–29
- UDFs, 128–29

Toolbars, View and Layout, 179**Topic(s), RTD server, 262–63****Topic class****Topic class, RTD server, 266–71****Topic parameters, RTD server, 260–61****TopicKey, RTD (Real Time Data) UDF, 277–78**

TopicSite

TopicSite, 283–84

Troubleshooting, UDFs, 136–38

Trust Children, 14

Trusted file locations

- Administrator-sanctioned, 14
- configuration options, 14
- workbook placement in, 45–46

Try/catch block, closing workbooks, 38

Types

- UDFs conversion, 123–24
- UDFs parameters, 125

U

UdfAutomation, 169

UdfDefinition, 185–86, 189–95

UdfManager, 151–55

UdfMethodWrapper, 155–59

UdfProxy, 149, 169

Udfs, 328–37

UnsupportedException, 80

Updating, Custom Web Services, 219

URLs/URNs, supported, list of, 45

User defined functions (UDFs)

- accessibility to Excel, requirements, 120–21
- allowed, trusted file locations, 14
- assembly loading process, 121–22
- assembly updating, 134–36
- Base Supported Type Set, 122–23
- caching, 132–33
- cell ranges, 127–28
- class lifetime, 122

client support, adding. *See* User defined functions (UDFs) client support

Custom Web Services generation of, 219

debugging, 138–40

duplicate names, 137

execution of, 120

function of, 119–20

HTML file project, 424

interoperability, 128

library component generation of, 206–8

loading on server, 134–36

.NET assemblies management, 15

parameters, 125–27

personal data UDFs, 130–32

return value of, 124

RTD (Real Time Data) server. *See* RTD (Real Time Data) UDF

SQL server. *See* SQL server UDF

thread safety, 128–29

troubleshooting, 136–38

type conversion, 123–24

volatility of, 129, 132

writing. *See* User defined functions (UDFs) assembly

User defined functions (UDFs) assembly, 101–18

adding UDF to Excel services, 105–6

caching, 115–18

class, adding, 103

external data, adding to workbook, 109–11

first UDF, 103–8

library component, starting process, 189–95
 method, adding to class, 104–5
 Nonserver Box development, 102
 optional parameters, adding, 108–9
 ranges, using with UDFs, 111–15
 References, adding, 102
 Server Box development, 102
 speed, adding, 112–15
 VB.NET code, 107–8
 workbook, creating, 106–7

User defined functions (UDFs) client support, 141–71

Addins, using UDFs inside client, 144–45
 automation to make calls, CUdfAutomation, 159–69
 caching, 155–56
 COM support, adding to assembly, 142–44
 configuration application, 148–49
 configuration class, 149–55
 generic XLL, use of, 170
 GetMultiStockQuote example, 145–47
 improvements, 170
 invocation method call, 156–59
 loading assemblies, UdfProxy, 149
 Programmable key, adding, 143
 registering assemblies, 144
 registering in system, 169
 UdfMethodWrapper class, 155–59

User interface (UI)

component, 209–10

Custom Web Services, 227–29
 Web Service definition, 227–29

Utils, 337

V

Value(s)

checking accuracy, 36
 getting from workbook, 22
 ranges, retrieving, 55–56
 retrieving, 49
 writing to cells, 35, 57–61
 writing to workbook, 22

Value error, UDF assembly, 136

VB.NET code

Hello World program, 40–41
 UDFs assembly, 107–8

View and Layout, EWA usage, 179

Virtual Earth project. See HTML file project

Visual Basic for Applications (VBA), unsupported, 10–11

Visual Studio

Add Web Reference, 30–31
 debugging UDFs, 138–40
 Excel Web Service API inconsistencies, 43–44
 New Project Wizard, 30

Volatile functions

defined, 19–20
 Volatile Function Cache Lifetime, 20

Volatility, of UDFs, 129, 132

W3wp.exe

W

W3wp.exe, debugging UDFs, 138–40

Warnings

- opening workbook, 45
- Status class, 66

Web queries, unsupported, 12

Web references, Visual Studio Add Web Reference, 30–31

WebServiceGenerator, 232–33

WebServiceMethod, 187–88

WebServiceMethodCollection, 187

WinForms

- library component, 209
- Web Service definition, 227–29

Workbook(s)

- caches. *See* Workbook caches
- cells, accessing, 34
- cells, writing to, 35
- closing, 36–38
- EWA connection, 180
- external, unsupported, 11
- external data, adding to workbook, UDF method, 109–11
- External Workbook Reference function. *See* Workbook referencing
- filter connection, 181
- on the fly. *See* Directly parameterized workbooks
- full snapshot, 56
- interaction with sessions, 17–18
- live, embedding, 23

manipulating on server. *See* Excel Web Service API

modifying model, 37–38

opening on server, 32–34

opening/closing, programmability, 21–22

published items snapshot, 56

template and session, 17

UDFs, call to, 106–7

and values. *See* Value(s)

Workbook caches, 18–19

- disk cache, 19
- loaded workbook, 19
- shared workbooks, 19

Workbook category, EWA usage, 179

Workbook referencing, 319–37

- calculations, 326–28
- coding, 328–37
- data, extracting from workbook, 322–23
- impersonation of user, 328–37
- manipulating workbook, 324–26, 333–37
- possible scenarios, 319–21
- proper errors, returning, 332–33
- range names, parsing, 331–32
- values, setting, 323–24

WorkbookData class

- Excel Services Library (ESL) assembly, 96–97
- use, example of, 97

Workflows, 339–68

- calculations, 348–55

coding, 347–68
deploying solution to server, 365–68
document library, 340–42
exception class, 358–59
Helper class, 355–58
multiple workbooks, generating,
 344–47, 359–65
problems, notification about, 342–44
SharePoint, 366–67

Workflow.xml, 366–67

**Wrappers, interface, implementing,
77–78**

**WSDL (Web Services Description
Language), 30, 33**

X

XLL, UDFs client support, 170

.xlsb file format, 10

.xlsx file format, 10

XLViewer, custom, 376–82

coding, 379–82
operation of, 376–79

XML

AJAX library, 401–6
Custom XML parts, 226–27
feature file, 365–66
RSS file format, 236
unsupported functions, 12
workflow definitions, 366–67









