

Analytical and other software on the Secure Research Environment

The Research Environment runs with the operating system: Microsoft Windows Server 2016 DataCenter edition. The environment is based on the Microsoft Data Science virtual machine template and includes the following software:

- R Version 4.0.2 (2020-06-22), as part of Microsoft R Open
- R Studio Desktop 1.3.1093 working with R 4.0.2
- Anaconda 3, including an environment for Python 3.8.5
- Python, 3.8.5 as part of the Anaconda base environment
- Jupyter Notebook, as part of the Anaconda3 environment
- Microsoft Office 2016 Standard edition, including Word, Excel, PowerPoint, and OneNote (*Access not included*)
- JuliaPro 0.5.1.1 and the Juno IDE for Julia
- PyCharm Community Edition, 2020.3
- PLINK
- JAGS
- WinBUGS
- OpenBUGS
- stan and rstan
- Apache Spark 2.2.0
- SparkML and pySpark
- Apache Drill 1.11.0
- MAPR Drill driver
- VIM 8.0.606
- TensorFlow
- MXNet, MXNet Model Server
- Microsoft Cognitive Toolkit (CNTK)
- Weka
- Vowpal Wabbit
- xgboost
- Team Data Science Process (TDSP) Utilities
- VOTT (Visual Object Tagging Tool) 1.6.11
- Microsoft Machine Learning Server
- PowerBI
- Docker version 10.03.5, build 2ee0c57608
- SQL Server Developer Edition (2017), including Management Studio and SQL Server Integration Services (SSIS)
- Visual Studio Code 1.17.1
- Nodejs
- 7-zip
- Evince PDF Viewer
- Acrobat Reader
- Microsoft Photo Viewer
- PowerShell



And in the Premium research environments:

- STATA 16.1
- SAS 9.4, m4 (academic license)

Users also have the ability to bring in additional software if the software was specified in the data request, the software runs in the operating system described above, and the user can provide Vivli with any necessary licensing keys. Software licenses must be validated by the software only at installation or setup: software that validates the license on each invocation will not work. Users must attest that the license agreements they need for any of the software they want to bring in can be used in the Vivli research environment.

R Packages included in the Research Environment:

abind	bitops	clisymbols	Cubist
acepack	blob	cluster	curl
AnnotationDbi	boot	cmprsk	data.table
AnnotationFilter	brew	cobalt	datasets
askpass	brglm	coda	DBI
assertthat	brio	codetools	dbplyr
backports	broom	coin	DelayedArray
base	BRugs	colorspace	deployRserve
base64enc	BSgenome	combinat	desc
BBmisc	cairoDevice	commonmark	devtools
BH	callr	compiler	DiagrammeR
bindr	car	conquer	dichromat
bindrcpp	carData	corpcor	diffobj
Biobase	caret	corrplot	digest
BiocFileCache	caTools	covr	doParallel
BiocGenerics	CBPS	cowplot	downloader
BiocManager	cellranger	CoxBoost	dplyr
BiocParallel	checkmate	cpp11	drat
BiocVersion	checkpoint	crayon	DT
biomaRt	chron	credentials	e1071
Biostrings	class	crosstalk	earth
biovizBase	classInt	crpp	ebal
bit	cli	crrstep	editrules
bit64	clipr	crskdiag	ellipse



CENTER FOR GLOBAL CLINICAL RESEARCH DATA

ellipsis	ggpubr	inum	maps
ensemldb	ggrepel	ipred	maptools
Epi	ggsci	ipw	markdown
etm	ggsignif	IRanges	MASS
evaluate	gh	IRdisplay	Matching
exactRankTests	git2r	IRkernel	MatchIt
fansi	gitcreds	irlba	Matrix
farver	glmnet	isoband	MatrixGenerics
fastICA	glmnetUtils	ISwR	MatrixModels
fastmap	glue	iterators	matrixStats
fastmatch	Gmisc	jomo	maxstat
forcats	gower	jpeg	mboost
foreach	gplots	jsonlite	mda
foreign	graphics	kernlab	memoise
forestplot	grDevices	KernSmooth	metafor
formatR	Greg	klaR	methods
Formula	grid	km.ci	mets
formula.tools	gridExtra	KMsurv	mgcv
fs	gsubfn	knitr	mice
futile.logger	gtable	labeling	MicrosoftR
futile.options	gtools	labelled	mime
gam	Gviz	lambda.r	miniCRAN
gbm	haven	later	miniUI
gdata	highr	lattice	minqa
geepack	Hmisc	latticeExtra	misc3d
generics	hms	lava	mitml
GenomeInfoDb	htmlTable	lazyeval	mitools
GenomeInfoDbData	htmltools	libcoin	mlbench
GenomicAlignments	htmlwidgets	lifecycle	mlr
GenomicFeatures	httpuv	lme4	mnormt
GenomicRanges	httr	logistf	ModelMetrics
geosphere	huxtable	loo	modelr
gert	igraph	lpSolveAPI	modeltools
ggforce	influenceR	lubridate	multcomp
ggmap	ini	magrittr	munsell
ggplot2	inline	mapproj	mvtnorm

6 March 2021
Version 1.2



CENTER FOR GLOBAL CLINICAL RESEARCH DATA

nlme	praise	RcppProgress	Rsamtools
nloptr	prettyunits	RcppRoll	Rsolnp
nnet	pROC	RCurl	RSQLite
npls	processx	readr	rstan
numDeriv	prodlim	readxl	rstatix
openssl	profileModel	recipes	rstudioapi
openxlsx	progress	rematch	rtracklayer
operator.tools	promises	rematch2	RUnit
ordinal	ProtGenerics	remotes	rversions
pamr	proto	repr	rvest
pan	proxy	reprex	S4Vectors
parallel	ps	reshape2	sandwich
parallelMap	psych	RevoIOQ	sas7bdat
ParamHelpers	Publish	RevoMods	SASxport
party	purrr	RevoUtils	scales
partykit	quadprog	RevoUtilsMath	selectr
pbdZMQ	quantreg	rex	servr
pbkrtest	questionr	rgexf	sessioninfo
pdp	R.cache	RgoogleMaps	shape
pec	R.methodsS3	RGtk2	shiny
penalized	R.oo	Rhtslib	snow
pillar	R.utils	rio	sourcetools
pkgbuild	R2WinBUGS	riskRegression	sp
pkgconfig	R6	rJava	SparseM
pkgload	randomForest	rjson	spatial
plogr	randomForestSRC	RJSONIO	splines
plot3D	ranger	rlang	spls
plotmo	RANN	rmarkdown	sqldf
plotrix	rappdirs	rms	SQUAREM
pls	rattle	ROCR	stabs
plyr	rcmdcheck	RODBC	STAN
png	RColorBrewer	Rook	StanHeaders
poilog	Rcpp	roxygen2	statmod
polyspline	RcppArmadillo	rpart	stats
polyclip	RcppEigen	rpart.plot	stats4
polynom	RcppParallel	rprojroot	stepp

6 March 2021
Version 1.2



CENTER FOR GLOBAL CLINICAL RESEARCH DATA

stringi	testthat	usethis	xgboost
stringr	TH.data	utf8	xlsx
strucchange	tibble	utils	xlsxjars
styler	tidyr	uuid	XML
subselect	tidyselect	V8	xml2
SummarizedExperiment	tidyverse	VariantAnnotation	xopen
superpc	timeDate	vctrs	xtable
survAUC	timereg	viridis	XVector
survey	timeROC	viridisLite	yaml
survival	tinytex	visNetwork	zeallot
survivalROC	tmvnsim	waldo	zip
survminer	tools	WeightIt	zlibbioc
survMisc	translations	whisker	zoo
sys	truncnorm	withr	
tcltk	tweenr	WriteXLS	
TeachingDemos	ucminf	xfun	

Python Packages included in the Research Environment:

adal	containerservice	powerbiembedded	bleach
alabaster	azure-mgmt-core	azure-mgmt-rdbms	blinker
anaconda-client	azure-mgmt-cosmosdb	azure-mgmt-recoveryservices	bokeh
anaconda-navigator	azure-mgmt-datafactory	azure-mgmt-recoveryservicesbackup	boto
anaconda-project	azure-mgmt-datalake-analytics	azure-mgmt-redis	botocore
applicationinsights	azure-mgmt-datalake-nspkg	azure-mgmt-relay	Bottleneck
argh	azure-mgmt-datalake-store	azure-mgmt-reservations	brotlipy
argon2-cffi	azure-mgmt-datamigration	azure-mgmt-resource	bz2file
asn1crypto	azure-mgmt-devspaces	azure-mgmt-scheduler	CacheControl
astroid	azure-mgmt-devtestlabs	azure-mgmt-search	cached-property
astropy	azure-mgmt-dns	azure-mgmt-servicebus	certifi
async-generator	azure-mgmt-documentdb	azure-mgmt-servicefabric	cffi
atomicwrites	azure-mgmt-eventgrid	azure-mgmt-signalr	chainer
attrs	azure-mgmt-eventhub	azure-mgmt-sql	chainercv
autopep8	azure-mgmt-hanaonazure	azure-mgmt-storage	chainerrl
azure-batch	azure-mgmt-iotcentral	azure-mgmt-subscription	chardet
azure-cli-nspkg	azure-mgmt-iothub	azure-mgmt-trafficmanager	click
azure-common	azure-mgmt-iothubprovisioningservices	azure-nspkg	cloudpickle
azure-core	azure-mgmt-keyvault	azure-servicebus	clyent
azure-datalake-store	azure-mgmt-loganalytics	azure-servicefabric	colorama
azure-graphrbac	azure-mgmt-logic	azure-servicemanagement-legacy	comtypes
azure-keyvault	azure-mgmt-machinelearningcompute	azureml	conda
azure-keyvault-certificates	azure-mgmt-managementgroups	Babel	conda-build
azure-keyvault-keys	azure-mgmt-managementpartner	backcall	conda-package-handling
azure-keyvault-secrets	azure-mgmt-maps	backports-abc	conda-verify
azure-mgmt-advisor	azure-mgmt-marketplaceordering	backports.functools-lru-cache	configparser
azure-mgmt-applicationinsights	azure-mgmt-media	backports.shutil-get-terminal-size	contextlib2
azure-mgmt-authorization	azure-mgmt-monitor	backports.ssl-match-hostname	cPython
azure-mgmt-batch	azure-mgmt-msi	backports.tempfile	cryptography
azure-mgmt-batchai	azure-mgmt-network	backports.weakref	cycler
azure-mgmt-billing	azure-mgmt-notificationhubs	bcrypt	Cython
azure-mgmt-cdn	azure-mgmt-nspkg	beautifulsoup4	cytoolz
azure-mgmt-cognitiveservices	azure-mgmt-policyinsights	bitarray	dask
azure-mgmt-commerce	azure-mgmt-	bkcharts	dashape
azure-mgmt-compute			decorator
azure-mgmt-consumption			defusedxml
azure-mgmt-containerinstance			diff-match-patch
azure-mgmt-containerregistry			distlib
azure-mgmt-			distributed



CENTER FOR GLOBAL CLINICAL RESEARCH DATA

fastrlock	Keras-Preprocessing	packaging	PyNaCl
filelock	keyring	pandas	pyodbc
flake8	kiwisolver	pandas-datareader	pyOpenSSL
Flask	lazy-object-proxy	pandocfilters	pyparsing
Flask-Cors	libarchive-c	paramiko	PyQt5
fsspec	lightgbm	parso	PyQt5-sip
funcsigs	llvmlite	partd	PyQtWebEngine
future	locket	path	pyreadline
gevent	lockfile	pathlib2	pyrsistent
glob2	lxml	pathtools	PySocks
greenlet	Mako	patsy	pyspark
gym	Markdown	pbr	pytest
h5py	MarkupSafe	pep8	python-dateutil
HeapDict	matplotlib	pexpect	python-jsonrpc-server
helpdev	mccabe	pickleshare	python-language-server
html5lib	menuinst	Pillow	pytz
idna	mistune	pip	PyWavelets
imageio	mkl-fft	pkginfo	pywin32
imagesize	mkl-random	pluggy	pywin32-ctypes
importlib-metadata	mkl-service	ply	pywintypes
iniconfig	mock	progress	PyYAML
intervaltree	more-itertools	prometheus-client	pymzmq
ipykernel	mpmath	prompt-toolkit	QDarkStyle
ipython	msgpack	protobuf	QtAwesome
ipython-genutils	msrest	psutil	qtconsole
ipywidgets	msrestazure	ptyprocess	QtPy
isodate	multipledispatch	py	regex
isort	navigator-updater	py4j	requests
itsdangerous	nbclient	pyarrow	requests-file
jdcal	nbconvert	pycodestyle	requests-oauthlib
jedi	nbformat	pycosat	rope
Jinja2	nbpresent	pyparser	Rtree
jmespath	nest-asyncio	pycrypto	ruamel-yaml
joblib	networkx	pycurl	ruamel.yaml
json5	nlTK	pydash	ruamel.yaml.clib
jsonschemata	nose	pydocstyle	s3transfer
jupyter	notebook	pydocumentdb	scikit-image
jupyter-client	numba	pydot	scikit-learn
jupyter-console	numexpr	pyflakes	scipy
jupyter-core	numpy	pyglet	seaborn
jupyterlab	numpydoc	Pygments	Send2Trash
jupyterlab-launcher	oauthlib	pygpu	setuptools
jupyterlab-pygments	odo	PyJWT	simplegeneric
jupyterlab-server	olefile	pylint	singledispatch
Keras-Applications	openpyxl	pymongo	sip

6 March 2021

Version 1.2



six	spyder	toolz	widgetsnbextension
sklearn-contrib-py-earth	spyder-kernels	torch	win-inet-pton
smart-open	SQLAlchemy	torchvision	win-unicode-console
snowballstemmer	statsmodels	tornado	wincertstore
sortedcollections	subprocess32	tqdm	wrapt
sortedcontainers	sympy	traitlets	xgboost
soupsieve	tables	typing-extensions	xlrd
Sphinx	tabulate	uamqp	XlsxWriter
sphinxcontrib-applehelp	tblib	ujson	xlwings
sphinxcontrib-devhelp	tensorflow-tensorboard	unicodcsv	xlwt
sphinxcontrib-htmlhelp	terminado	urllib3	xmldict
sphinxcontrib-jsmath	testpath	watchdog	yapf
sphinxcontrib-qthelp	Theano	wcwidth	zict
sphinxcontrib-	threadpoolctl	webencodings	zipp
serializinghtml	tiffle	Werkzeug	zope.event
sphinxcontrib-websupport	toml	wheel	zope.interface

This document describes the software contained on Research Environments provisioned after March 6, 2021.