netBravo	

netBravo Server Raw Data Format

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There are different types of data the netBravo project can publish. Every day we accept measurements taken from the users of our mobile application and can make them available as compressed XML or JSON files. There is a privacy concern, however, which we mitigate by anonymizing (hashing) the instanceId of the data (which is the unique identifier of an application instance and could be used to find or even forge the identity of users uploading data) and the SSID of wireless hotspots (the name of the network). Everything else we publish in the following format:

[Export Entity]

Field name	Field type	Description	Example
devices	array of [Device Entity]	List of mobile devices used in generating the data	
measures	array of [ExportMeasure Entity]	Records containing data from an application installed on a specific device	

[Device Entity]

Field name	Field type	Description	Example
id	int	Unique id for the device	10344
appname	string	Application name generating the data	SmartRadioMonitor
appversion	string	The application version	1.1
osname	string	Operating system name	Android
osversion	string	Operating system version	7.1.2
hardware	string	Name of the hardware	iPhone5,2
manufacturer	string	Hardware manufacturer	APPLE
model	string	Device model	iPhone
product	string	Specific product name	P103AP
brand	string	Device brand	APPLE
sdk	string	SDK version	19
codename[1]	string	Operating system version codename	REL
board[1]	string	Name of the underlying board	Goldfish

[ExportMeasure Entity]

Field name	Field type	Description	Example
instanceId	string	Unique identifier of the application instance	A hash of the actual instanceId, to prevent forging measurements
deviceId	Int	The unique identifier of the device used to gather data	10344
ip	String	The IP address of the device when the data was sent	1.2.3.4
speedtests	array of [SpeedTest Entity]	Speed test data entities	
cellinfos	array of [CellInfo Entity]	Cell information data entities	
wifiinfos	array of [WifiInfo Entity]	Wi-Fi information data entities	
cellmeasures	array of [CellMeasurement Entity]	Cell measurement data entities	
wifimeasures	array of [WifiMeasurement Entity]	Wi-Fi measurement data entities	

[SpeedTest Entity]

Field name	Field type	Description	Example
starttime	datetime	The time at which the test started	2014-11-12T16:45:30.202+01:00
endtime	datetime	The time at which the test ended	2014-11-12T16:45:56.349+01:00
host	string	The URL host of the server used for the test	http://1.2.3.4:80
externalIp	string	The IP address that the server receives the requests from	5.6.7.8
locations	array of [Location Entity]	Location info gathered during the test	
pingtest	[PingTest Entity]	Ping test information	
dwspeedtest	[SpeedTestInfo Entity]	Download speed information	
upspeedtest	[SpeedTestInfo Entity]	Upload speed information	
nets	array of [SpeedTestNet Entity]	Network information records	
wifimeasures	array of [WifiMeasurement Entity]	Measurements of Wi-Fi data during the test	
cellmeasures	array of [CellMeasurement Entity]	Measurements of Cell data during the test	

[SpeedTestNet Entity]

Field name	Field type	Description	Example
ip	String	The IP address during speed test	1.2.3.4
gwip	String	The gateway IP during speed test	1.2.3.1
cellnetwork	Int	Cellular network type	11
wififreq	Int	The Wi-Fi frequency in kHz	2472
lnkspeed	Int	Link speed of the Wi-Fi connection in Mb/s	54
cellinfo	[CellInfo Entity]	Cell connection information	
wifiinfo	[WifiInfo Entity]	Wi-Fi connection information	

[SpeedTestInfo Entity]

Field name	Field type	Description	Example
speed	Int	Average speed in bps	182502
nanosec	Long	Duration of test in nanoseconds	38925175249
bytes	Int	Number of transferred bytes	22566592
threads	Int	Number of threads used per test	1
details	array of [SpeedTestInfoDetail Entity]	Detail records for each thread	

[SpeedTestInfoDetail Entity]

Field name	Field type	Description	Example
time	Long	time in nanoseconds	7946556791
threadnumber	Int	client thread Id	1
bytes	Int	total downloaded bytes in the thread	4022952

[PingTest Entity]

Field name	Field type	Description	Example
besttime	Long	best response time in nanoseconds	6946556791
avgtime	Long	average response time in nanoseconds	9746556791
numofpings	Int	number of ping commands sent	10
details	[PingTestDetail Entity]		

[PingTestDetail Entity] [2]

Field name	Field type	Description	Example
time	Long	response time in nanoseconds	6946556791
pckssent	Int	number of packets sent	10
pcksreceived	Int	number of packets received	9
pcksunexpected	Int	number of unexpected packets received	0

[WifiInfo Entity]

Field name	Field type	Description	Example
signalsourceid	String	unique hotspot id generated by the device	WIFI-00:15:63:80:21:00
datetime	Datetime	the time at which the hotspot was identified	2014-10-31 11:56:55.0000000
bssid	String	the base station device identifier	00:15:63:10:21:00
ssid	String	the network name	A hash of the actual SSID, for privacy reasons
hiddenssid	Bool	true if the SSID is not being broadcast	True/false
capabilities[1]	String	describes the authentication, key management, and encryption schemes supported by the access point	[WPA-PSK-TKIP][ESS]
macaddress[1]	String	device MAC address	04:46:35:78:72:B8
networkid[1]	Int	Each configured network has a unique small integer ID	3
opened	Bool	true if the network requires no authentication	True/false

[CellInfo Entity]

Field name	Field type	Description	Example
signalsourceid[1]	String	unique hotspot id generated by the device	UMTS:658993933032-1
datetime	Datetime	the time at which the hotspot was identified	2014-10-31 11:56:55.0000000
celltype	String	cell technology	GSM, CDMA, LTE, WCDMA
cid	Int	CID 28-bit UMTS Cell Identity described in TS 25.331	6584549
lac	Int	16-bit Location Area Code	15065
mcc	Int	3-digit Mobile Country Code	222
mnc	Int	2 or 3-digit Mobile Network Code	10
psc	Int	9-bit UMTS Primary Scrambling Code described in TS 25.331, 0..511	0
cdmabsid	Int	base station Id	0
cdmalat	Double	base station latitude	38.3435454
cdmalng	Double	base station longitude	8.663321
cdmanid	Int	network id	4
cdmasid	Int	system id	23
lteci	Int	28-bit cell identity	6584549
ltepci	Int	physical cell id	10071
ltetac	Int	16-bit tracking area code	12089

[WifiMeasurement Entity] [1]

Field name	Field type	Description	Example
signalsourceid	String	unique hotspot id generated by the device	WIFI-bc:c6:db:6d:6d:90
time	Datetime	the time at which the measurement was taken	2014-09-08 15:35:30.0000000
location	[Location entity]	Location when the measurement was taken	
freq	Int	frequency in kHz of the Wi-Fi channel used	2462
lnkspeed	Int	the link speed in Mb/s during the measurement	39
ip	String	the IP address of the connection	1.2.3.4
gwip	String	the gateway IP address	1.2.3.1
rssi	Int	connection power in dBm	-78
level	Int	connection quality level	20

[CellMeasurement Entity] [1]

Field name	Field type	Description	Example
signalsourceid	String	unique hotspot id generated by the device	UMTS:657131215061-1
time	Datetime	the time at which the measurement was taken	2014-09-08 15:35:30.0000000
location	[Location entity]	Location when the measurement was taken	
network	Int	network type	3
asu	Int	signal level as an ASU value	12
dbm	Int	the signal strength as dBm	-103
level	Int	the signal quality level	11
cdmadb	Int	CDMA RSSI value	-1
cdmaecio	Int	CDM Ec/Io value in dB*10	-1
evdodbm	Int	EVDO RSSI value in dBm	-89
evdoecio	Int	EVDO Ec/Io value in dB*10	
evdosnr	Int	the signal to noise ratio	
ltetmadv	Int	the timing advance value for LTE	

[Location Entity]

Field name	Field type	Description	Example
time	Datetime	the time of measuring the location	2014-11-19 10:11:33.0050000
loclat	Double	the latitude	45.810104
loclng	Double	the longitude	8.629137
localt	Double	the altitude	210.726501
locbearing	Double	the bearing of the phone	34.453125
locprovider	String	location provider	gps
locaccuracy	Double	estimated accuracy in meters	10.000000
speed	Double	the speed in meters/second	0.260000
locvaccuracy[2]	Double	estimated vertical accuracy in meters	3.000000

There is no exported connection between Info entities and Measurement entities. The correlation is done by comparing measurement time and instance id. In case this process might prove too difficult for the users, we could change the export to have unique ids for measurements and infos and then export the connections between them. This might also allow dispensing with the publication of the instanceId, but then it wouldn't be raw data anymore, but a processed version of it.

We further intend to make the private data available for registered users through a system in which they authenticate, then download their own measurements only.

[1] Data marked with superscript 1 is not received from Apple iOS devices

[2] Data marked with superscript 2 is not received from Android devices