GRPC vs REST con .NET 5

Morgan Pizzini
Senior Consultant @ icubedsrl
Content Writer @ aspitalia

morgan.pizzini@icubed.it | @morwalpiz

.NET Conference
Italia 2020

.NET

aspitalia.com

Agenda

- gPRC ?!?!
- Novità .NET 5
- Demo
- Risorse

gRPC ?!?!

- Framework open source RPC
  - Cloud Native Computing Foundation
- Costruito sopra
  - HTTP/2
  - Protobuf
- Principi guida
  - Performance
  - Cross platform

Remote Procedure Calls vs HTTP APIs

gRPC Remote Procedure Calls

- Contract first (proto file)
- Computer-readable
- Complessità gestita

HTTP APIs

- Content first (URL, HTTP method, JSON)
- Human-readable
- HTTP

Performance
Vantaggio per il developer

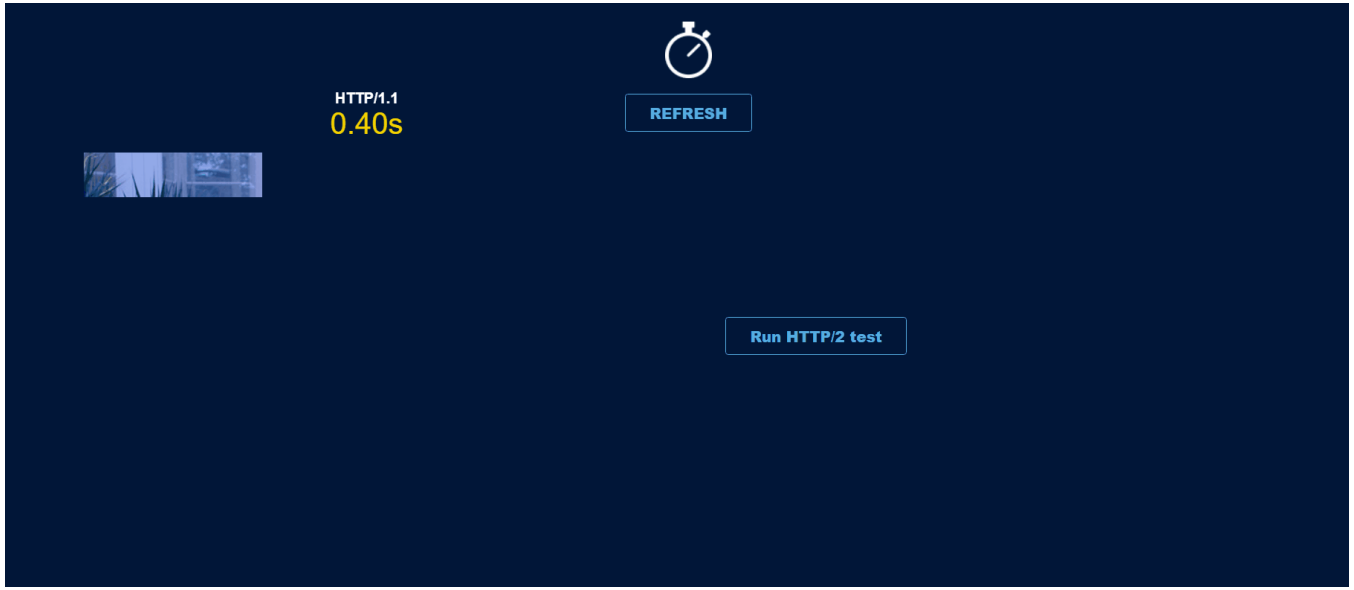
Ampia diffusione
Facilità 101

Novità .NET 5

- gRPC-Web browser support
  - gRPC-Web server middleware
  - gRPC-Web Blazor client
- Nuovo hosts gRPC su Windows
  - HTTP.sys
  - IIS
- Inter-process communication
- .NET 5 <> .NET CORE 3.1

Performance – HTTP/2

- HTTP/2 multiplexing
  - Più chiamate tramite singola connessione TCP
  - Rimozione “head-of-line blocking”

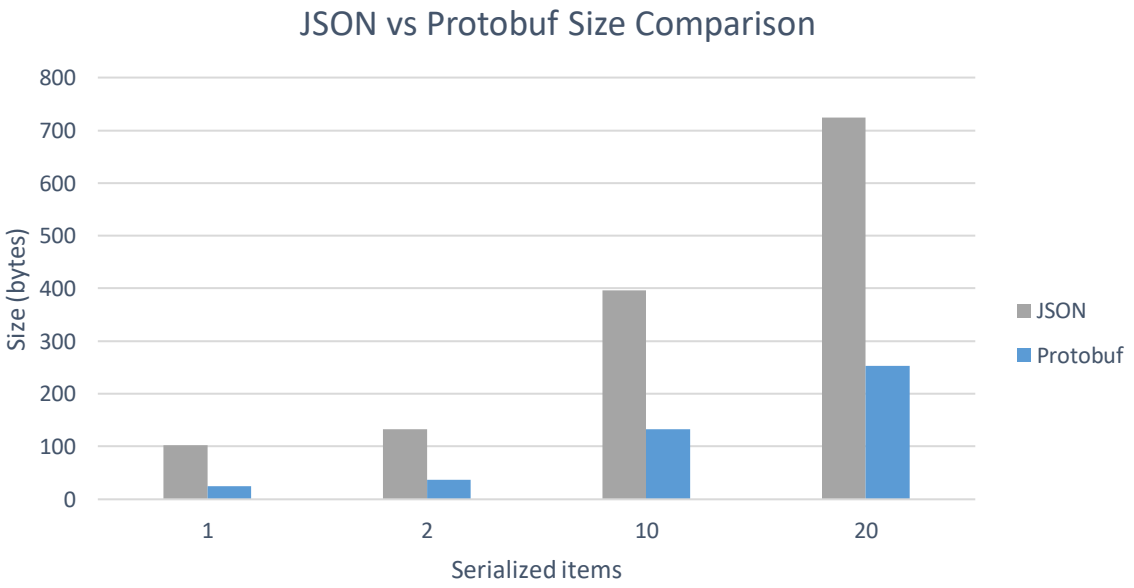


Performance – Bandwidth

- Ottimizzazione trasporto
  - Compressione header derivante da HTTP/2
  - Serializzazione Protobuf

```
{
  "query": "myQuery",
  "page_number": 42,
  "result_per_page": 100,
  "tickers": [
    {
      "name": "rPs",
      "value": 9.768923
    },
    {
      "name": "WEo",
      "value": 6.067048
    }
  ]
}
```

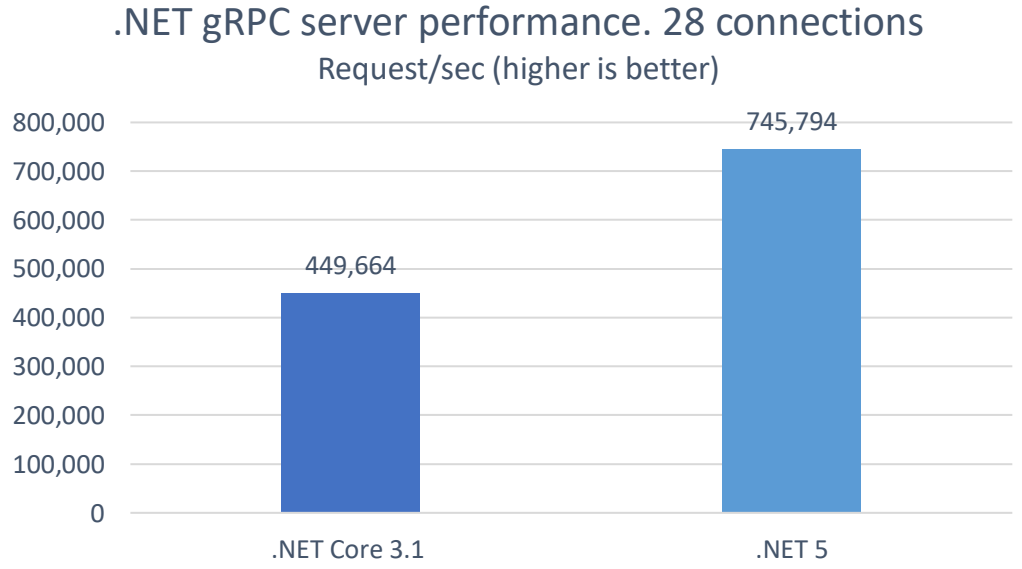
```
5052 4920 2a20 4854 5450 2f32
0d0a 534d 0d0a 0d0a 0000 0004
0000 0000 0401 0000 0000 0000
```



https://nilsmagnus.github.io/post/proto-json-sizes/

Performance – .NET 5 improvements

- HTTP/2 riduce allocazioni server del 92%
- Compressione HPack
- Serializzazione Protobuf tramite Span<T>



Server requests/sec +65%
Client request/sec +220%

Demo

Console app e Blazor con gRPC

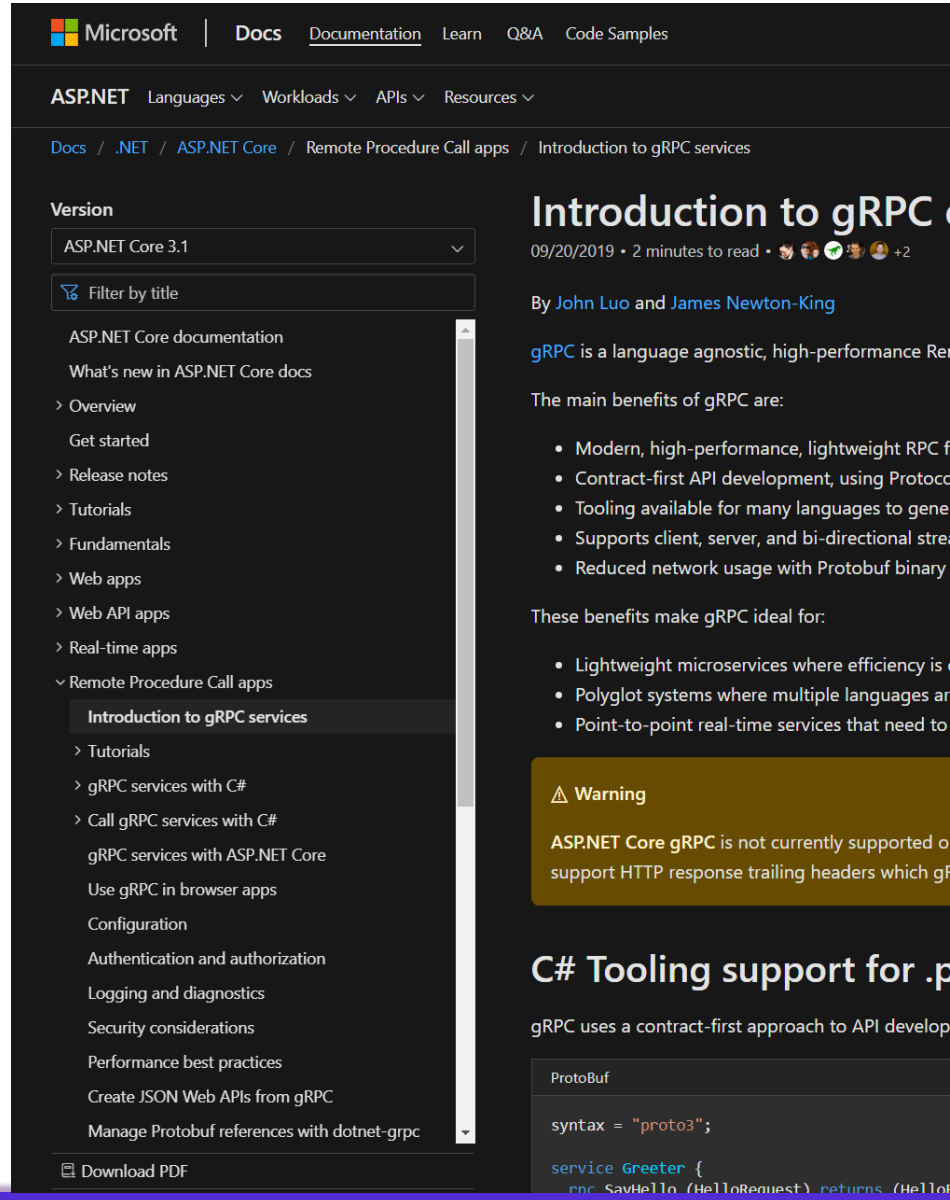
.NET Conference
Italia 2020

.NET

Risorse – Docs

- Tutorial 101
- Creazione/Chiamate servizi gRPC
- Creazione messaggi Protobuf
- Versionamento gRPC
- gRPC new browser
- gRPC e JSON Web APIs
- Best practices
- […]

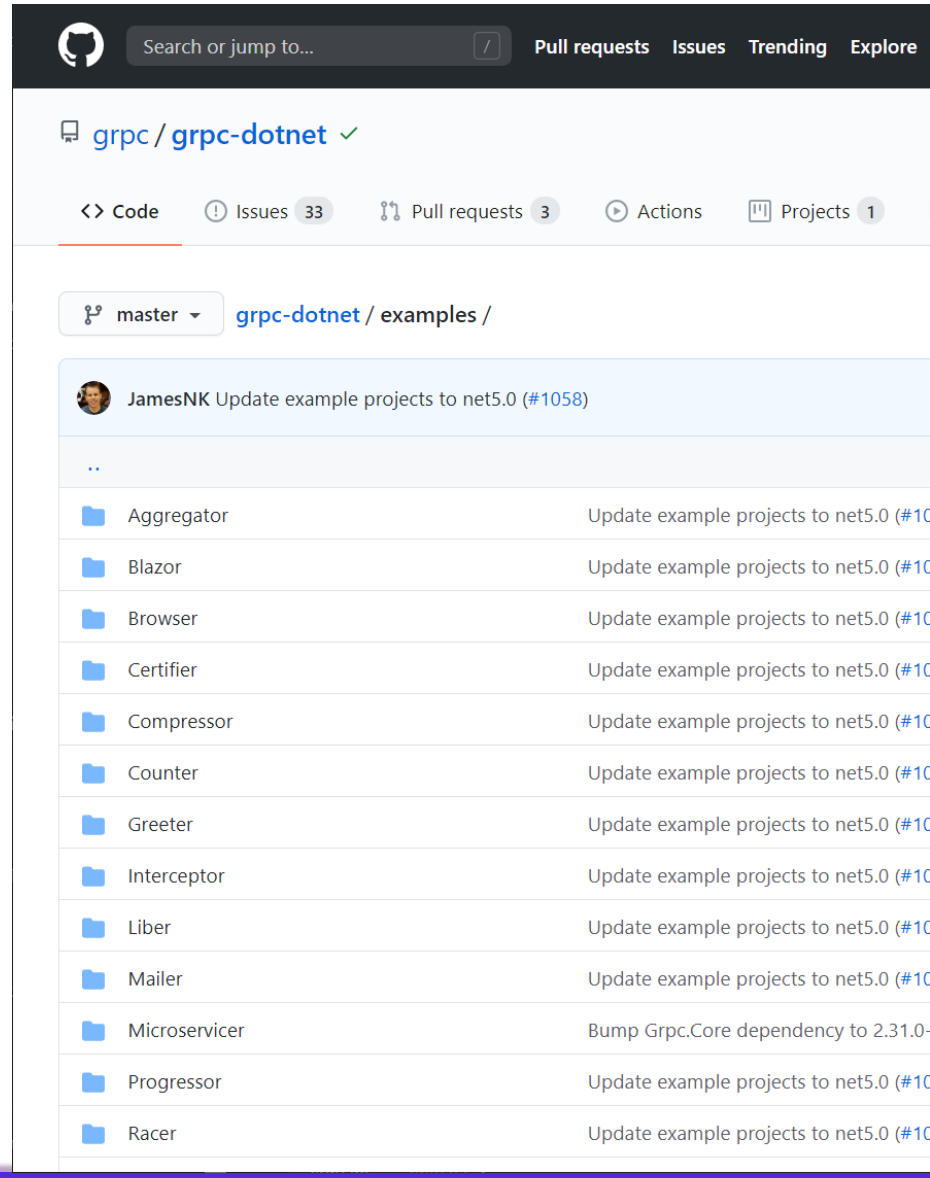
https://aka.ms/grpcdocs



Esempi

- Hello world
- Streaming
- Certificate authentication
- JWT authentication
- OpenTelemetry
- Unix domain sockets
- Unit testing
- Cancellation
- And more

https://aka.ms/grpcexamples



GRPC vs REST con .NET 5

GRAZIE!!

Morgan Pizzini
morgan.pizzini@icubed.it | @morwalpiz

.NET Conference
Italia 2020

.NET

aspitalia.com