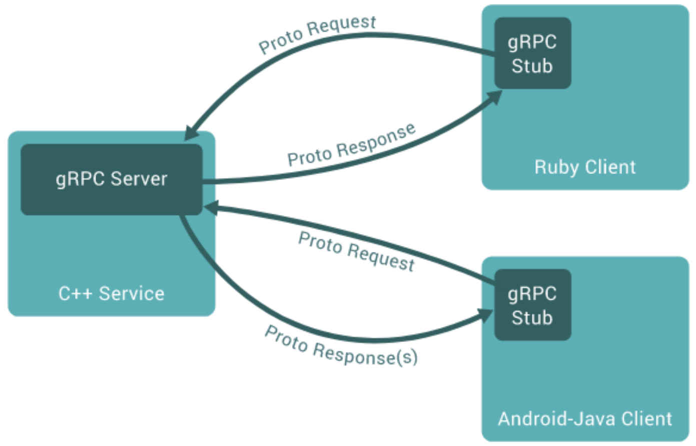
GRPC

Workshop

Simple service definition

Define your service using Protocol Buffers, a powerful binary serialization toolset and language

READ MORE



Works across languages and platforms

Automatically generate idiomatic client and server stubs for your service in a variety of languages and platforms

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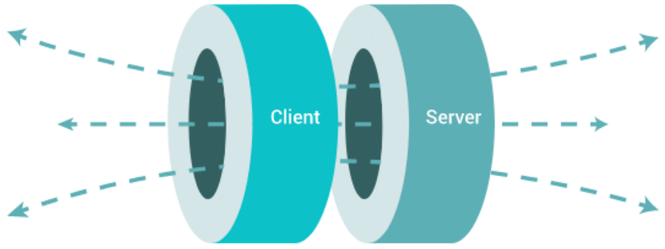
Start quickly and scale

Install runtime and dev environments with a single line and also scale to millions of RPCs per second with the framework

READ MORE



Bi-directional streaming and integrated auth

Bi-directional streaming and fully integrated pluggable authentication with http/2 based transport

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Why Grpc

- Heeft de voordelen van SoapUI :
  - contract
  - security (verschillende modellen)
  - code generatie
- En heeft de voordelen Json/Rest
  - speed
  - eenvoud

Protobuf

Contract wordt vastgelegd in een .proto file, en van daaruit wordt code gegenereerd.
Syntax:

```
service ServiceNaam {
  rpc MethodeAbc (msg) returns (msg) {}
  rpc MethodeYYY(stream msg) returns (stream msg) {}
}


message AbcMsg {
   string Naam = 1;
   int64 GeboorteDatum = 2;
   bytes RuweData = 3;
   repeated Adres = 4;
   GeslachtMsg geslacht = 5;
}
```

Protobuf vervolg …

```
// ‘inheritance’ is supported with:
message GenericMsg {
  oneof value {
    Specific01Msg specific01 = 1;
    Specific02Msg specific02 = 2;
  }
  ..
}
//enumerations:
enum GeslachtMsg {
   MAN = 0;
   VROUW = 1;
   NEUTRAAL = 2;
}

// other proto file(s) can be used.
import “andere.proto”;
```

Protobuf vervolg …

Compileren kan met protoc, mvn en/of gradle :

```
mvn protobuf:compile
mvn protobuf:compile-custom
```

Deze genereerd code in ./target/generated-source/protobuf/java :

```
XxxMsg.java + XxxMsgOrBuilder.java
```

resp: ./target/generated-source/protobuf/java-grpc :

```
ServiceNaamGrpc.java , deze bevat:
newStub(channel)
newBlockingStub(channel)
ServiceNaamGrpc.ServiceNaamImplBase
```

Implement grpc code ..1

Starten van de server (zonder security)

```
server = ServerBuilder.forPort(int).addService(service-impl).build();
server.start();
```

Starten van de client (zonder security):

```
channel = ManagedChannelBuilder.forAddress(host, port).usePlaintext(true));
```

//todo secure

grpc code .. 2, sync request server & client

Server, implement services:

Maak een class die: `ServiceNaamGrpc.ServiceNaamImplBase` extends, en implementeer de bijbehorende methodes.

Voorbeeld: rpc GetFeature(Point) returns (Feature) {}

```
//server
@Override
public void getFeature(Point request,
StreamObserver<Feature> responseObserver) {
  responseObserver.onNext(Feature);
  responseObserver.onCompleted();
}
--- //client
feature = blockingStub.getFeature(request);
```

grpc code .. 2b, async request client

Server is identiek.

```
//client
asyncStub.getFeature(request, responseObserver);
..
private StreamObserver<Feature> getObserver(CountDownLatch cdl) {
  return new StreamObserver<TranslateStringMsg>() {
    @Override
    public void onNext(TranslateStringMsg msg) {...}

    @Override
    public void onError(Throwable t) {cdl.countDown();}

    @Override
    public void onCompleted() {
        ...
        cdl.countDown();
    }
  };
}
```

grpc code .. 3a streaming api, server

Server, implement services:

Voorbeeld: rpc RecordRoute(stream Point) returns (RouteSummary) {}

```
public StreamObserver<Point>
 recordRoute(StreamObserver<RouteSummary> responseObserver) {
  return new StreamObserver<Point>() {
   @Override
   public void onNext(Point point) {
        ...
   }
   @Override
   public void onError(Throwable t) {
     ...
   }
   @Override
   public void onCompleted() {
     responseObserver.onNext(RouteSummary.newBuilder()..build();
     responseObserver.onCompleted();
  }
 };
```

grpc code .. 3b streaming api, client

voorb: rpc RecordRoute(stream Point) returns (RouteSummary) {}

```
StreamObserver<Point> reqObserver = asyncStub.recordRoute(respObserver);

StreamObserver<RouteSummary> responseObserver = new StreamObserver<RouteSummary>()
{
    @Override
    public void onNext(RouteSummary summary) {
         //doe iets met summary
    }

    @Override
    public void onError(Throwable t) {
    }

    @Override
    public void onCompleted() {
      info("Finished RecordRoute");
      finishLatch.countDown();
    }
};
```

grpc code .. 4 bi-directional

Server, implement services:

Voorbeeld: rpc RouteChat(stream RouteNote) returns (stream RouteNote) {}

```
public StreamObserver<RouteNote> routeChat(StreamObserver<RouteNote>
          responseObserver)
{
  return new StreamObserver<RouteNote>() {
  @Override
  public void onNext(RouteNote note) {
      ...
      responseObserver.onNext(RouteNote..build());
  }

  @Override
  public void onError(Throwable t) {
  }

  @Override
  public void onCompleted() {
    responseObserver.onCompleted();
  }
};
```

Hands-on

Volg de aanwijzing in :

doc\workshop-hanson.pdf

Met hints in doc\hints.txt (en deze presentatie)

(en werkende code in: \doc\working-code)

Zie verder : http://www.grpc.io/