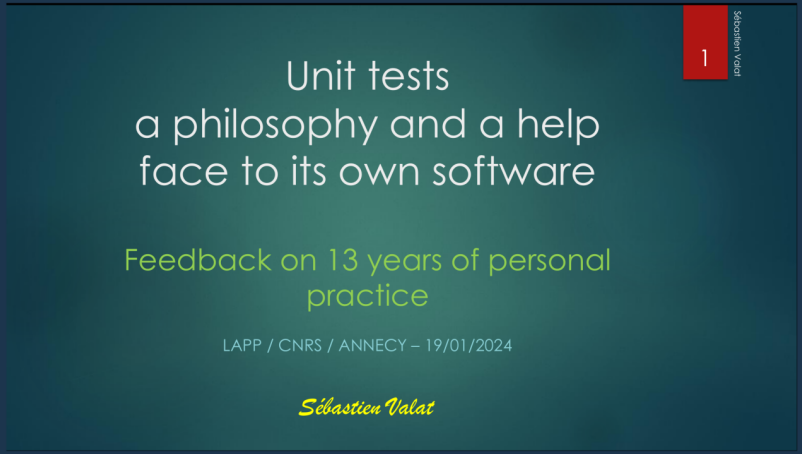
LAPP
Laboratoire d'Annecy de Physique des Particules

Se mocker (enfin)
Du Hardware

Vincent Pollet, Pierre Aubert

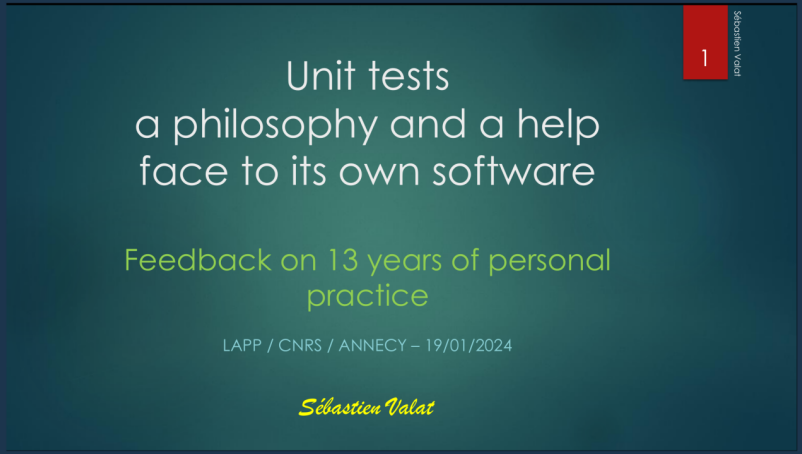
ESCAPE
cta cherenkov telescope array
cnrs
UNIVERSITÉ SAVOIE MONT BLANC

Introduction



Seminar on Unit Tests

Introduction



Seminar on Unit Tests

Possibility to **Mock network**

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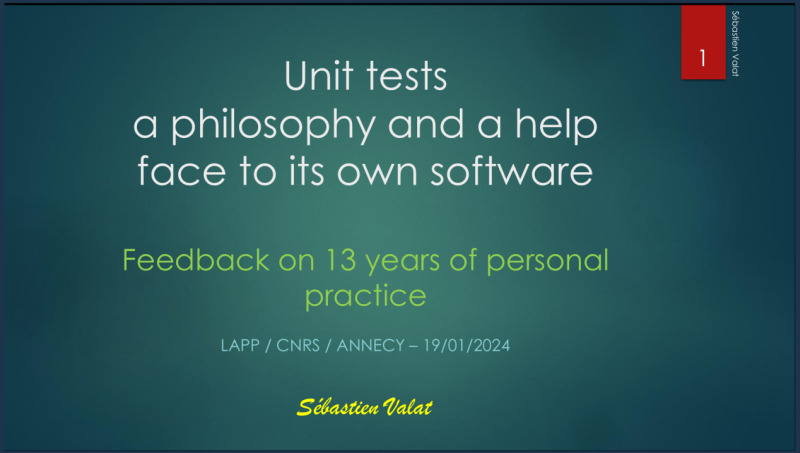

Seminar on Unit Tests

Possibility to **Mock network**

Mock **LHCb DAq** on a **laptop**

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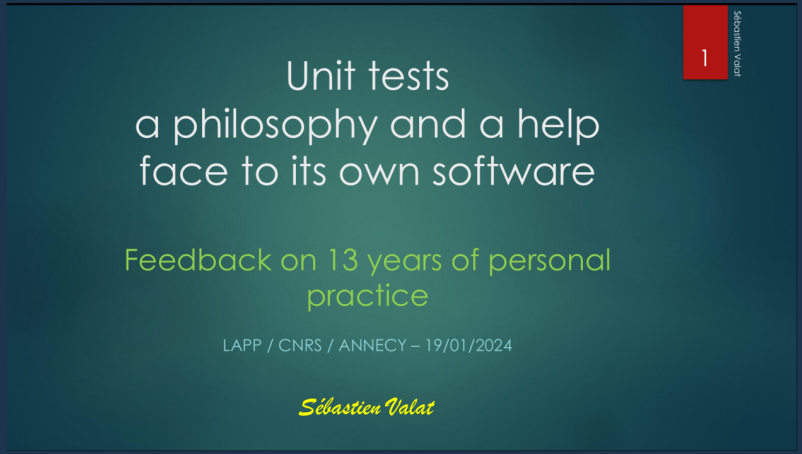

Seminar on Unit Tests

Possibility to **Mock network**

Mock **LHCb DAq** on a **laptop**

We could **mock only server interactions**

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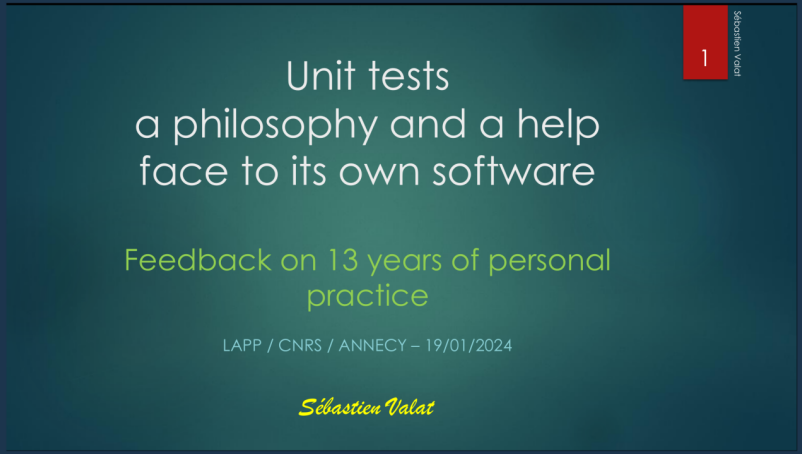


Seminar on Unit Tests

Possibility to **Mock network**

Mock **LHCb DAq** on a **laptop**

We could **mock only server interactions**

No implementation of a mock server **needed**

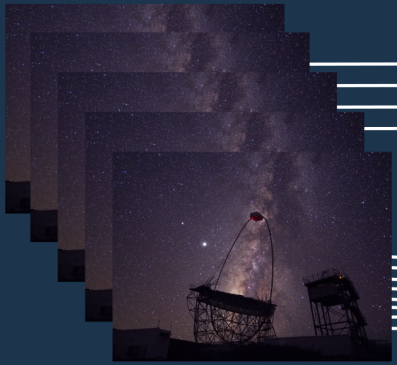
Motivation

Motivation

Motivation

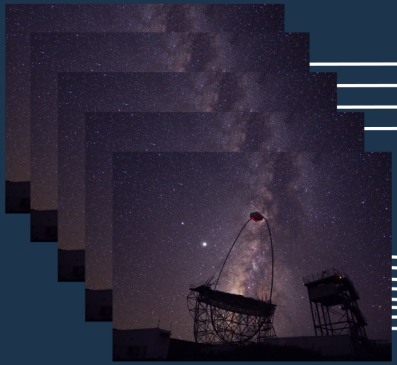
hipeRTA

Motivation



x19 telescopes North Site
x100 Telescopes South Site

Motivation



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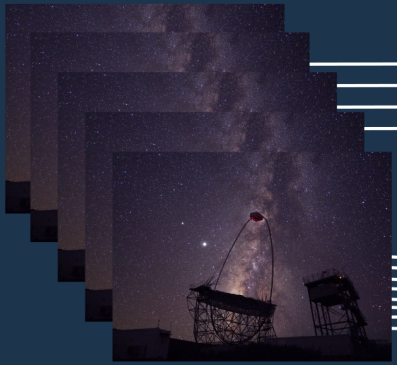
How To **Unit Test** It ?

Motivation



x19 telescopes North Site
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hipeRTA

How To **Unit Test** It ?

- On our **laptops**
- On **Gitlab CI**

Mock of Sockets ?

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Camera

Mock of Sockets ?

Mock of Sockets ?

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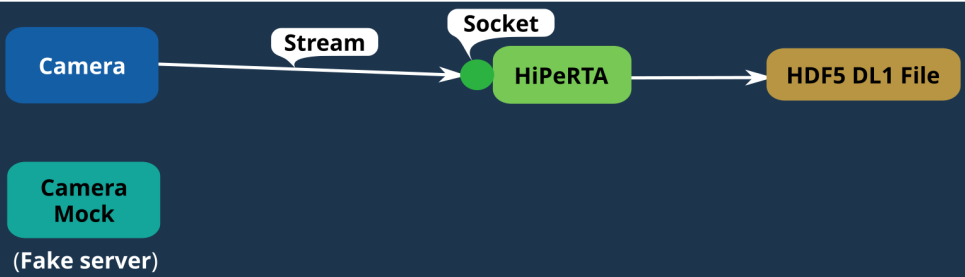
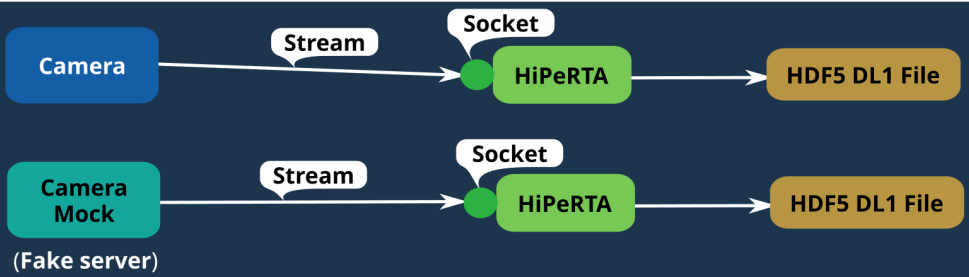
Mock of Sockets ?

Mock of Sockets ?



Mock of Sockets ?



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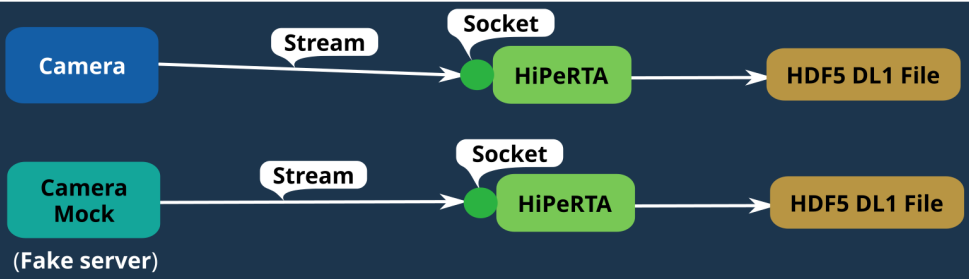

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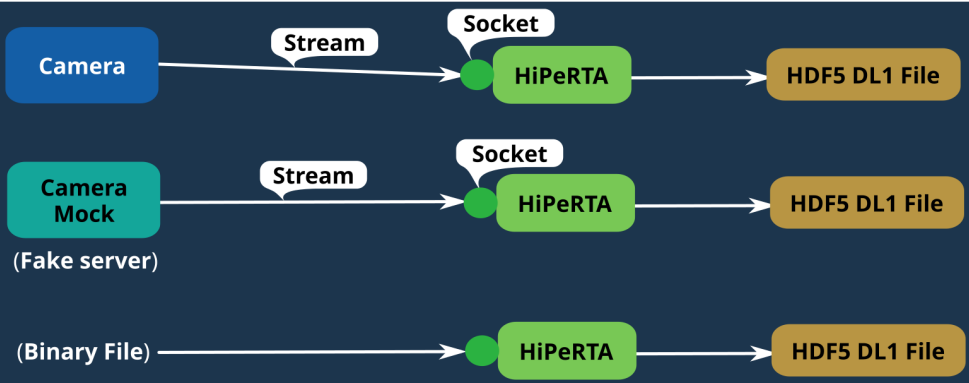

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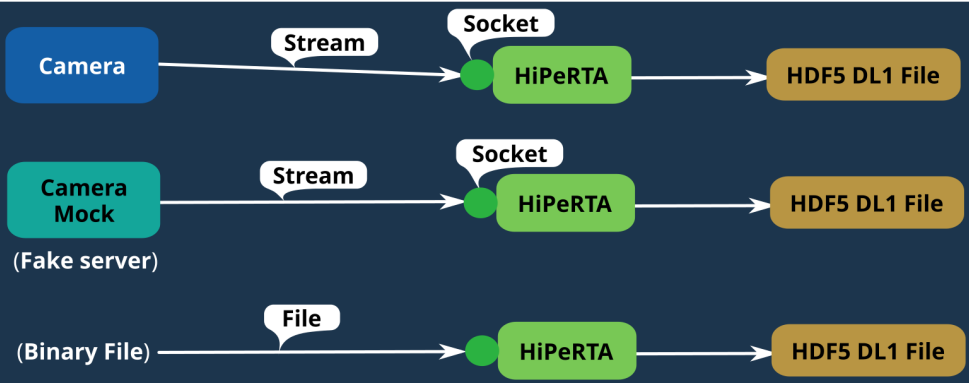

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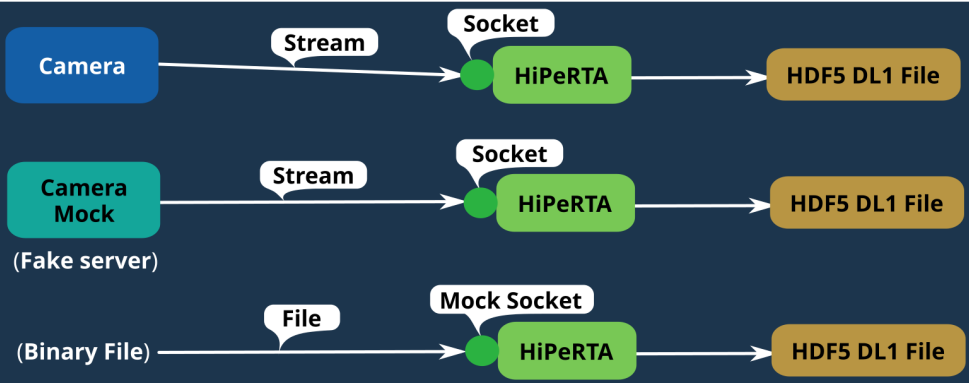

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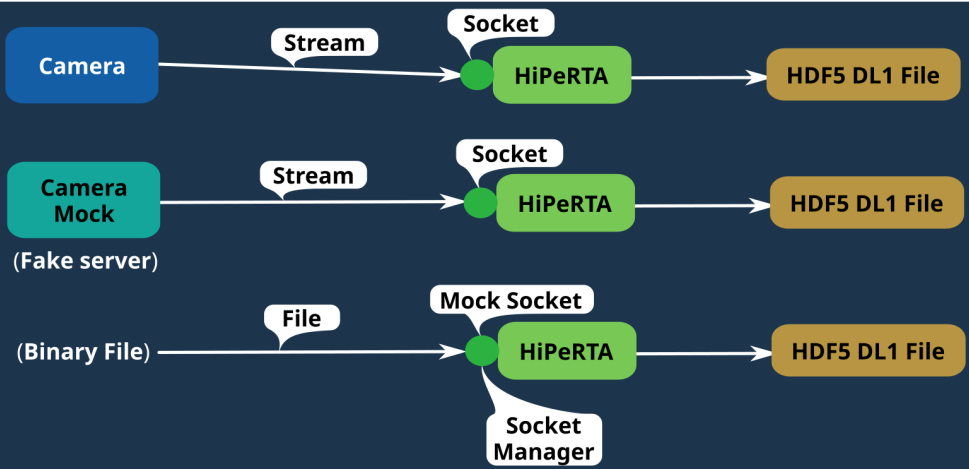

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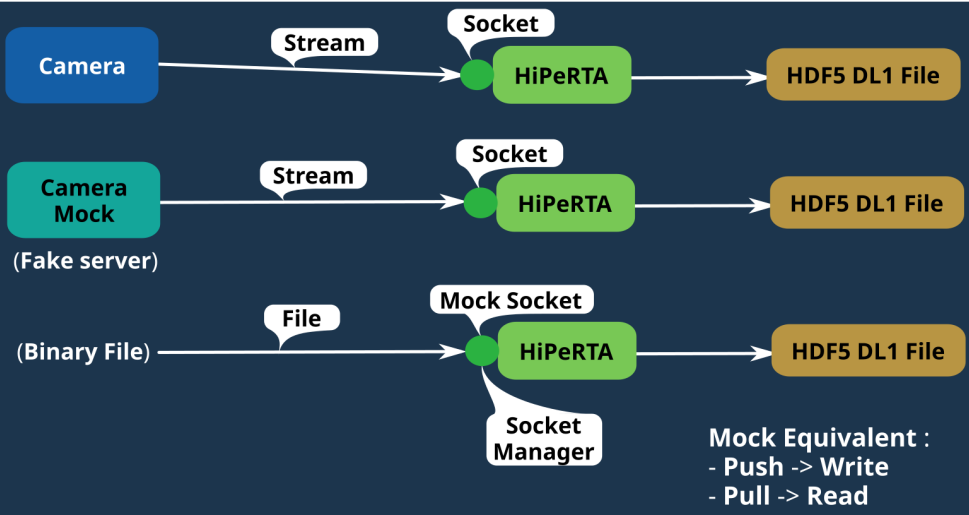

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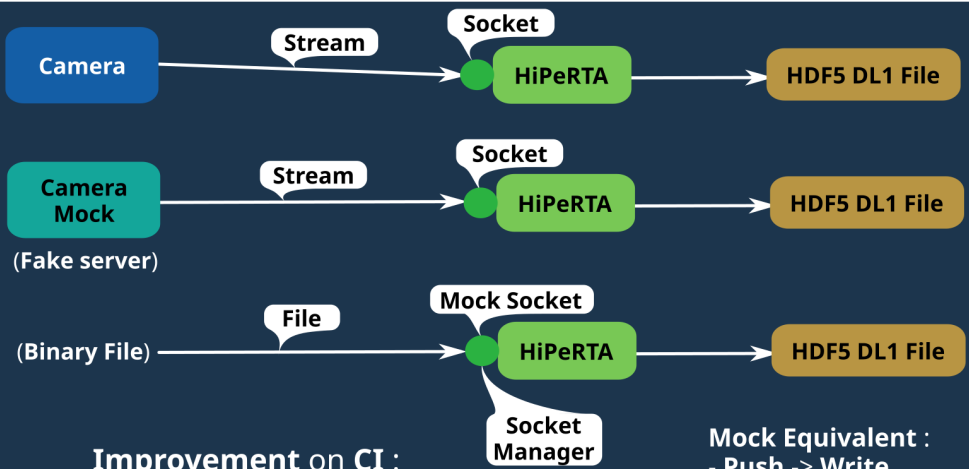


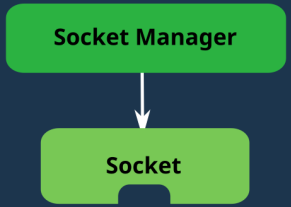
Improvement on **CI** :
- Unit tests use to take **40s**
- Now only **5s**

Mock Equivalent :
- **Push** -> **Write**
- **Pull** -> **Read**

Mock Sockets Design

Mock Sockets Design

Mock Sockets Design



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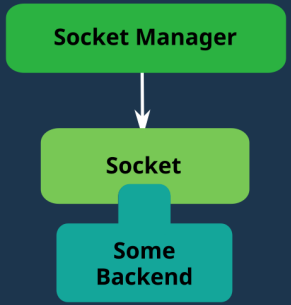

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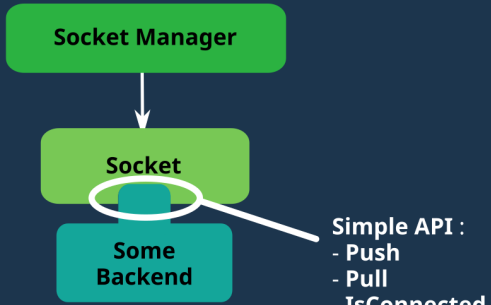

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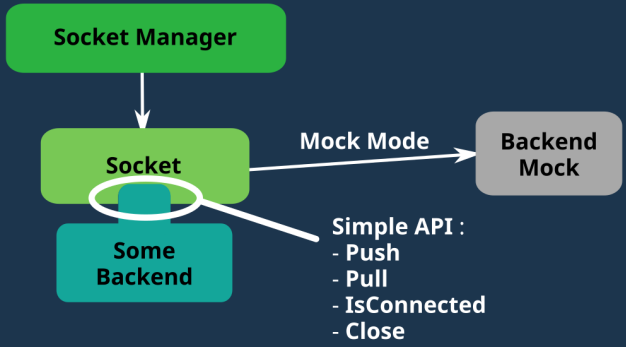

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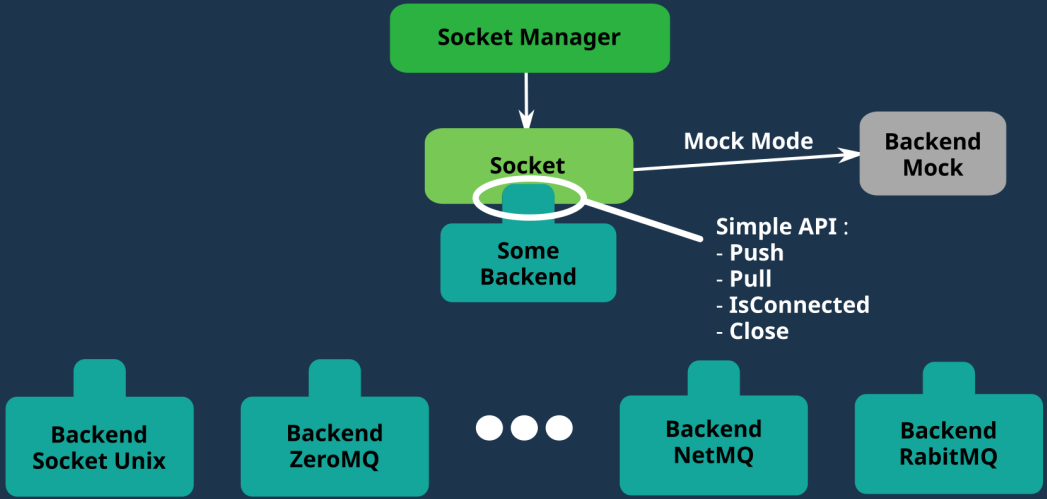
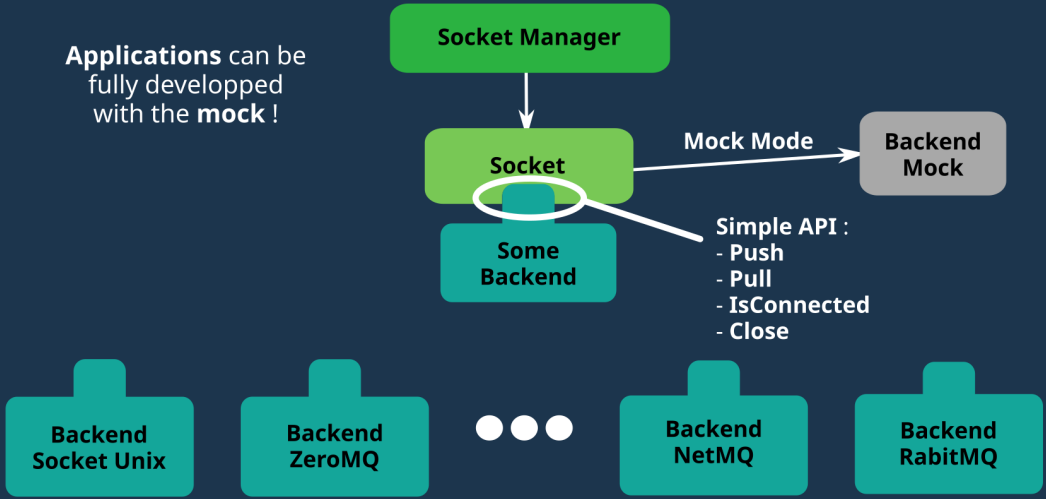


Mock Sockets Design

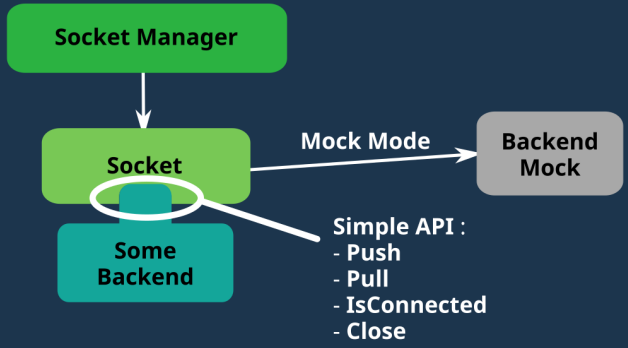
Applications can be fully developped with the **mock** !



Mock Sockets Design

Applications can be fully developped with the **mock** !

The **production backend** can be **choosen later**



Extending Socket Backend

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We could make **Sockets more generic**

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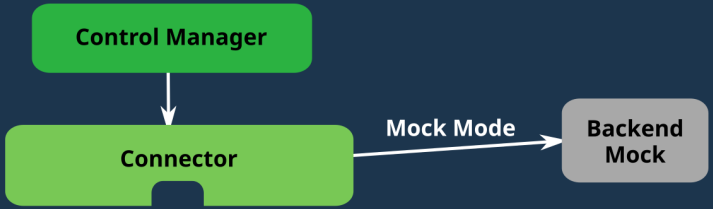
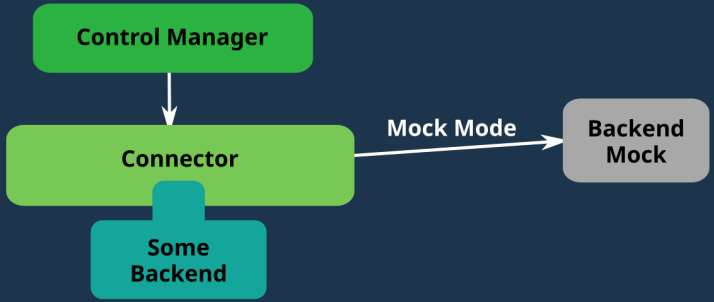


Extending Socket Backend

We could make **Sockets more generic**



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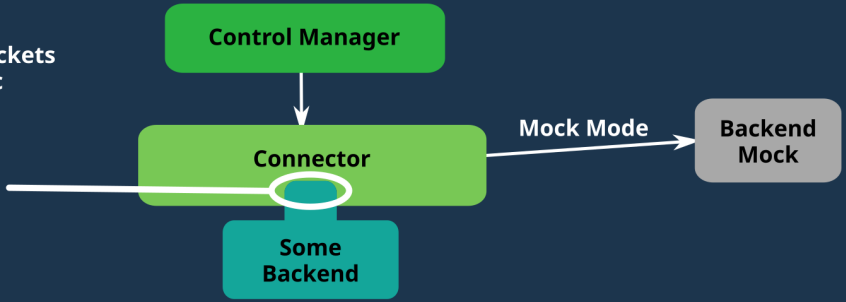
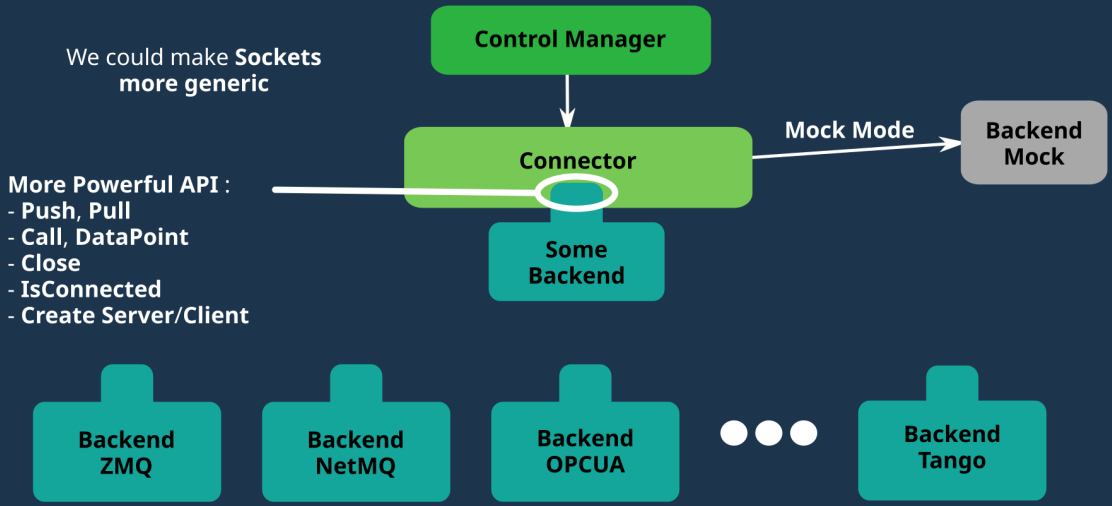


More Powerful API :
- **Push**, **Pull**
- **Call**, **DataPoint**
- **Close**
- **IsConnected**
- **Create Server/Client**

Extending Socket Backend



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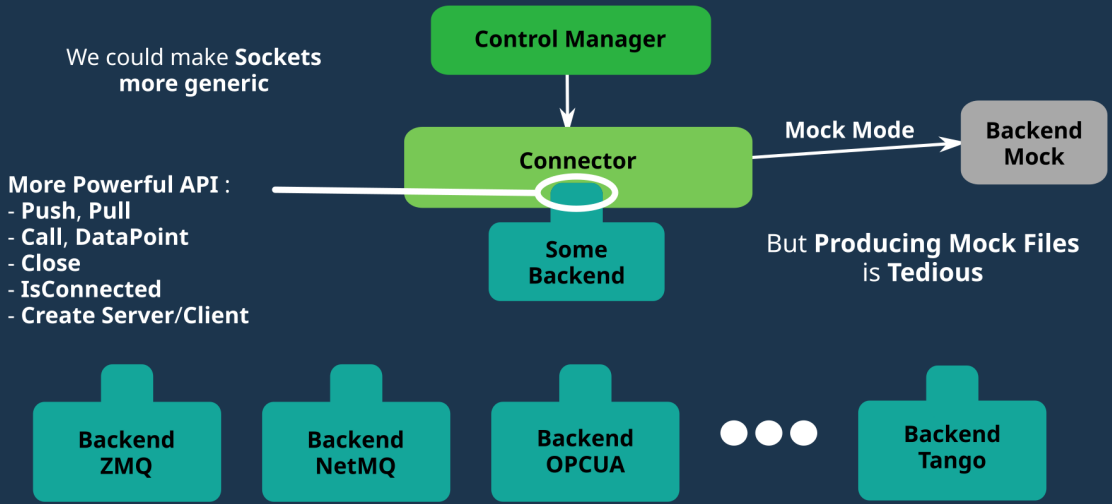

Mock Control Design

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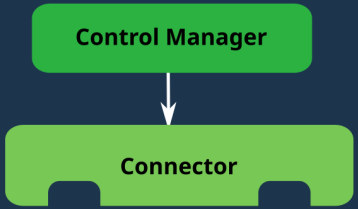

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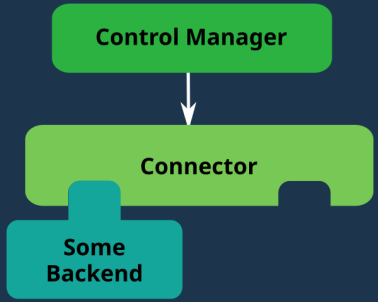

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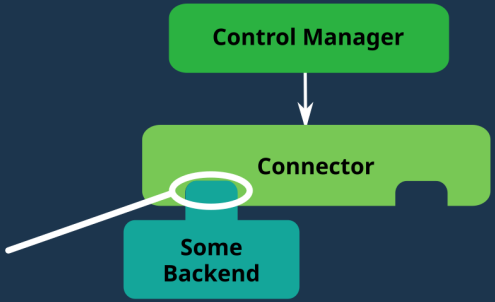

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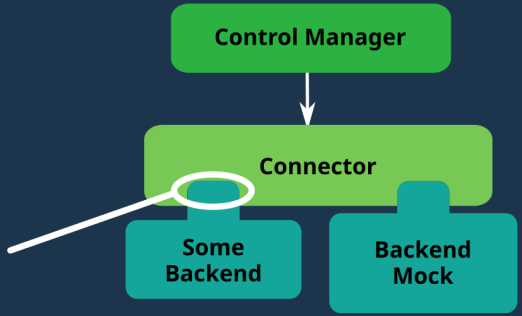

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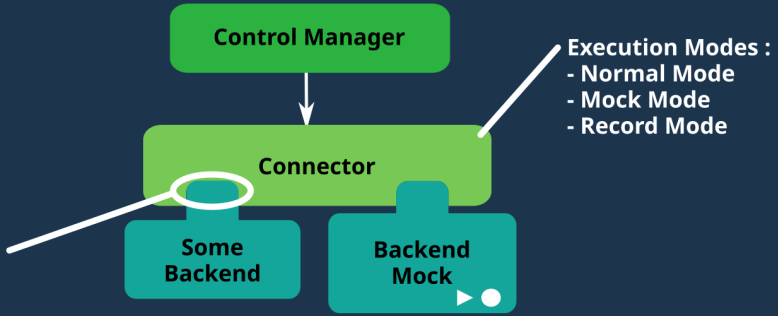

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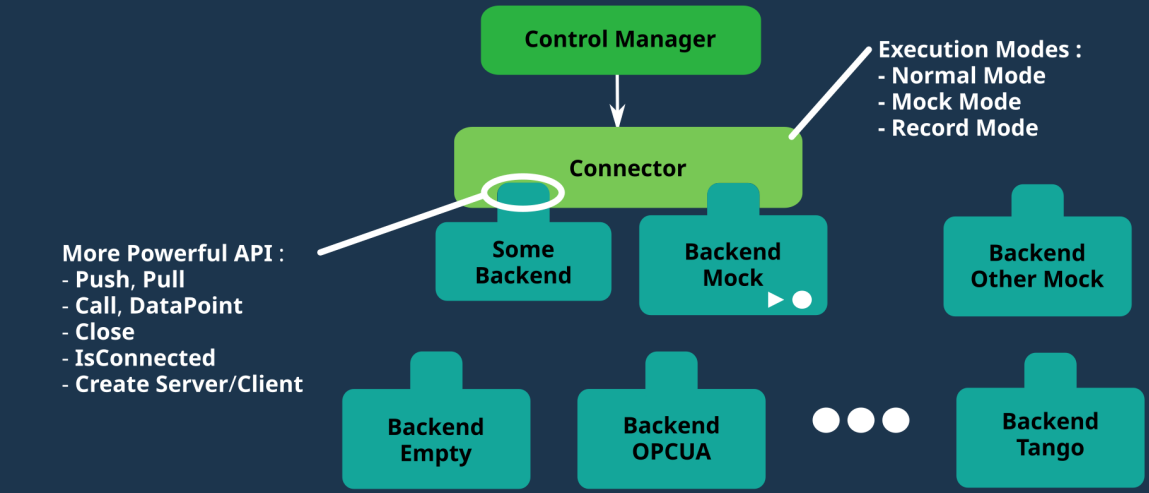

Normal Use and Mock

Normal Use

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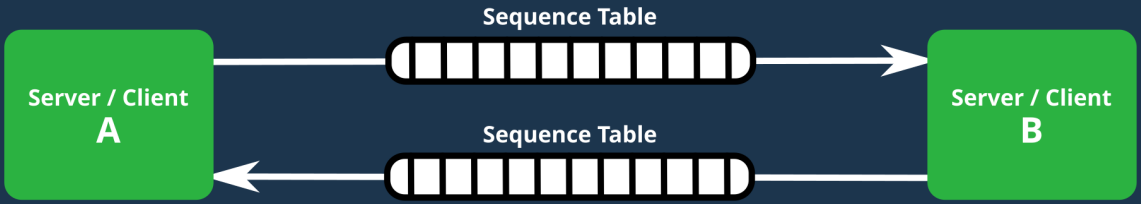

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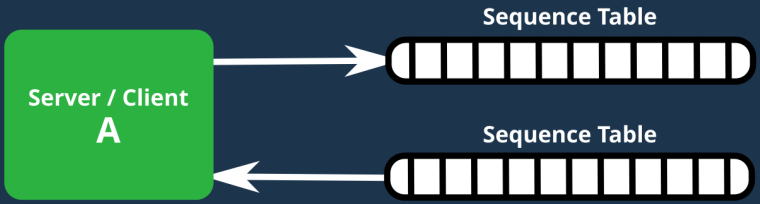

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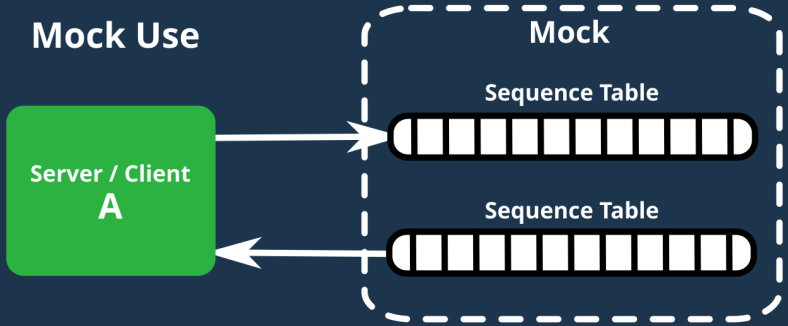

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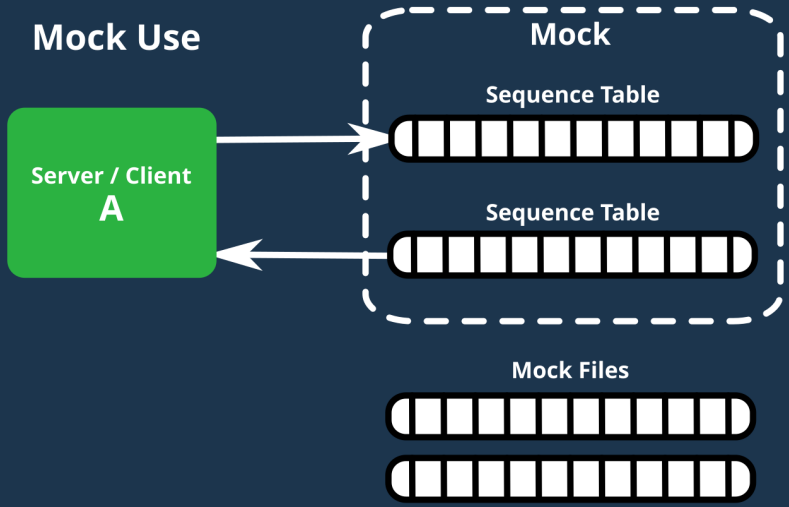

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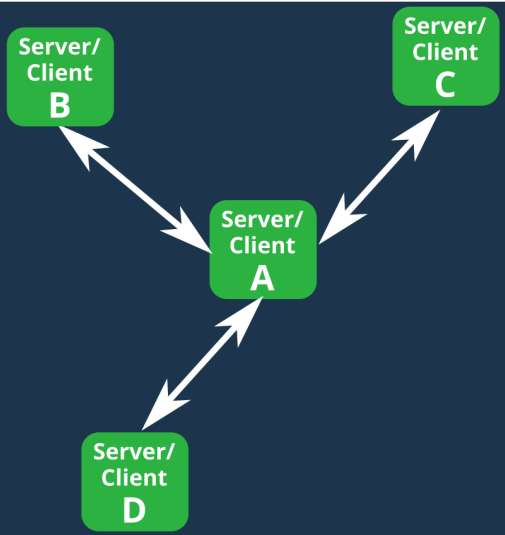

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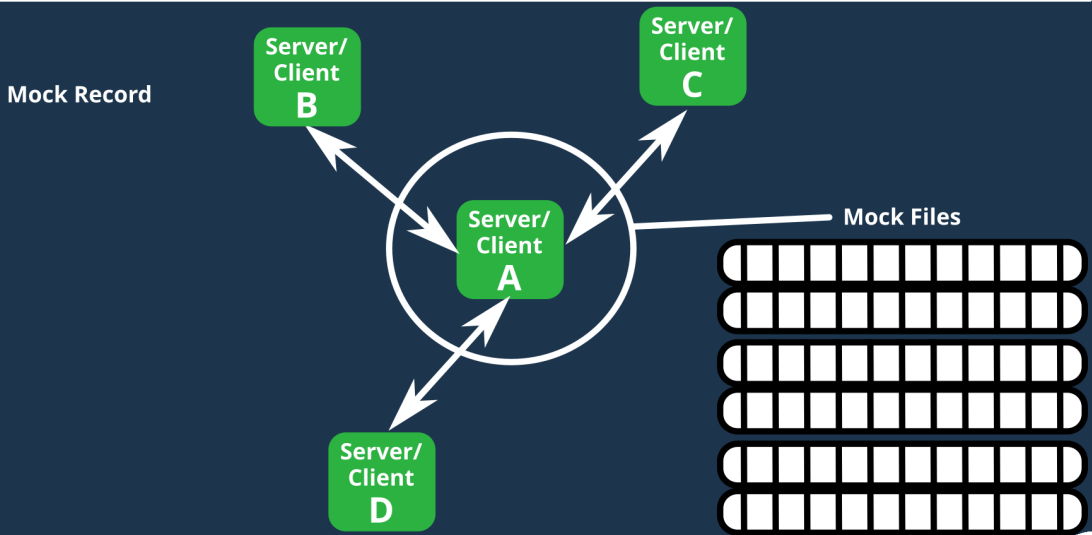

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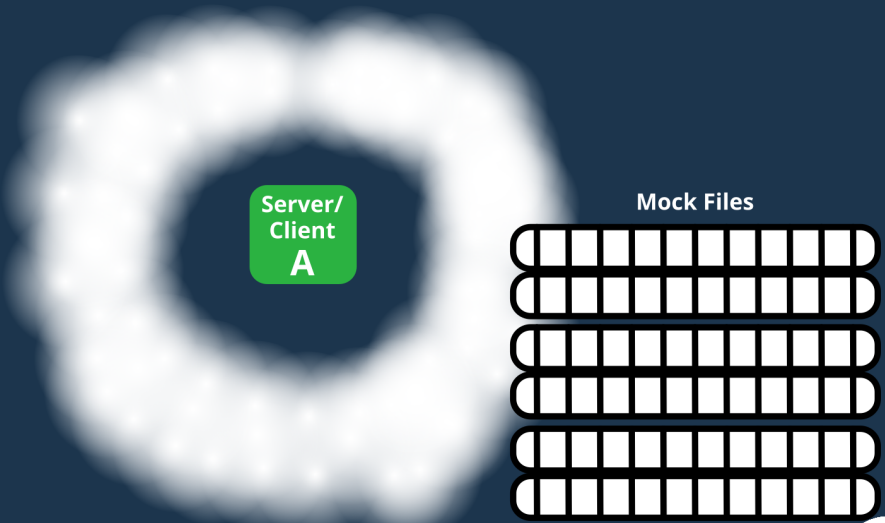


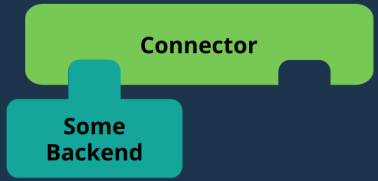
Sequence Table of A

Event Id and/or Time	State of A	Client/Sever : B			Client/Sever : C	
		Data Point B1	Calls From B of A1(X)		Calls From C of A2(X)	
			Params	Expected Result	Params	Expected Result
0	Waiting	-	-	-	-	-
1	-	B1 value	-	-	-	-
2	-	-	42	21	-	-
3	Ready	-	-	-	[63, 7]	[48, 12, 4]
28	-	-	-	-	-	-
56	Stop	-	-	-	-	-

Double Backend Design

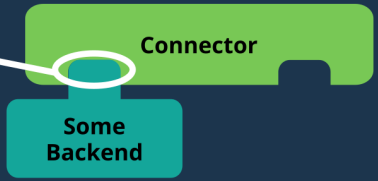
Double Backend Design

Double Backend Design



Double Backend Design

Backend API
Example :
- Push, Pull
- Call, DataPoint
- Close
- IsConnected
- Create Server/Client



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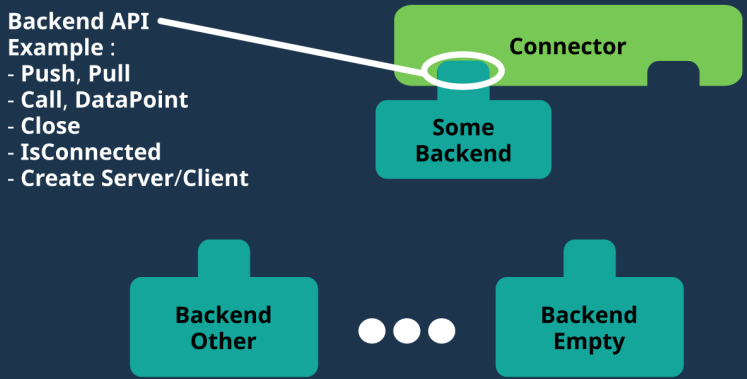

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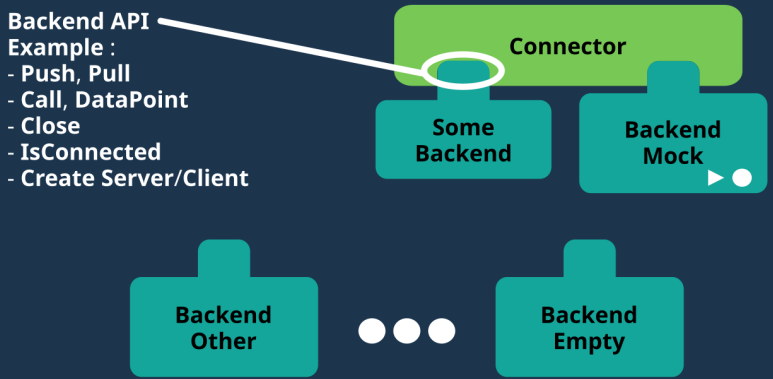

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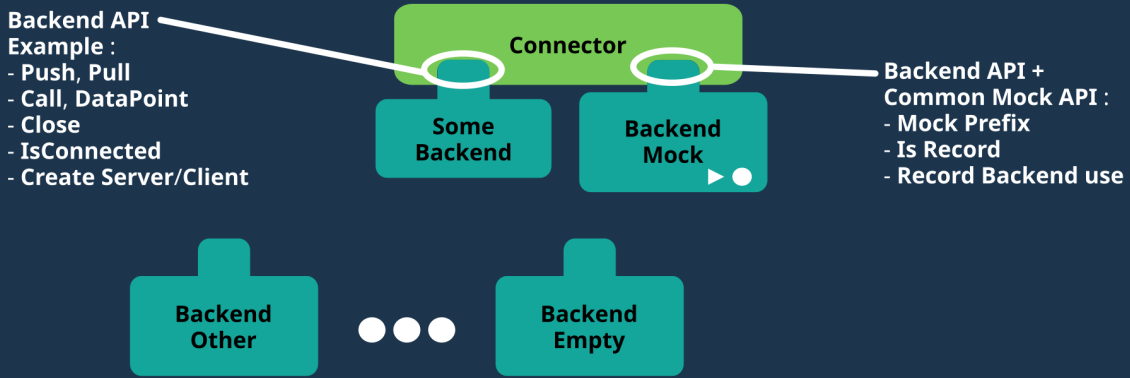

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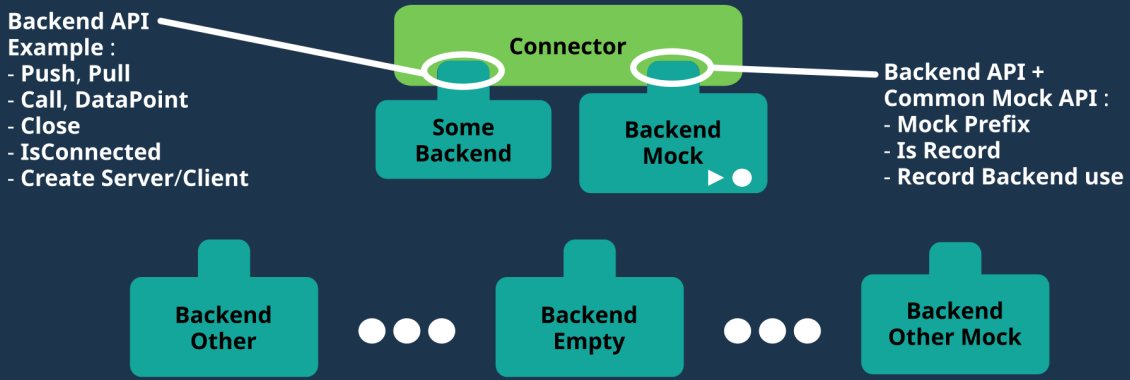

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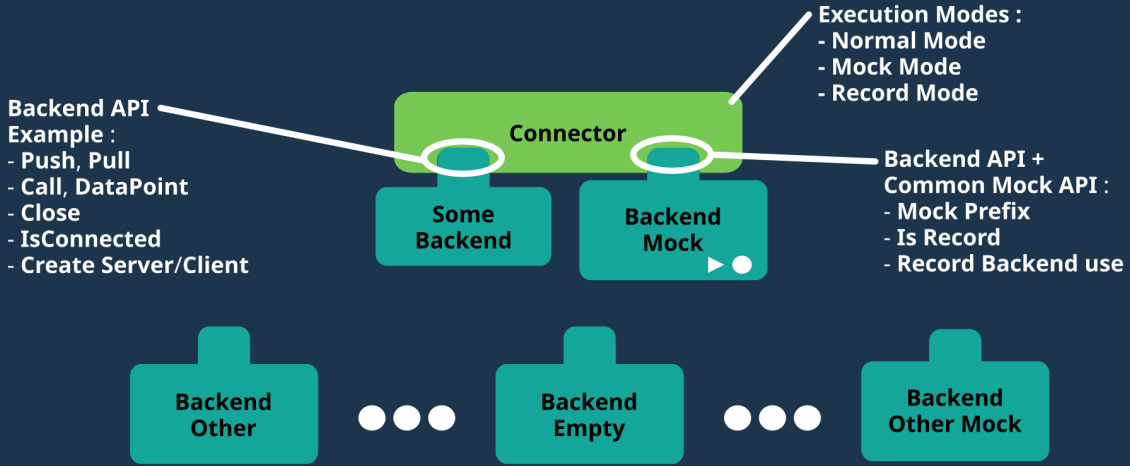

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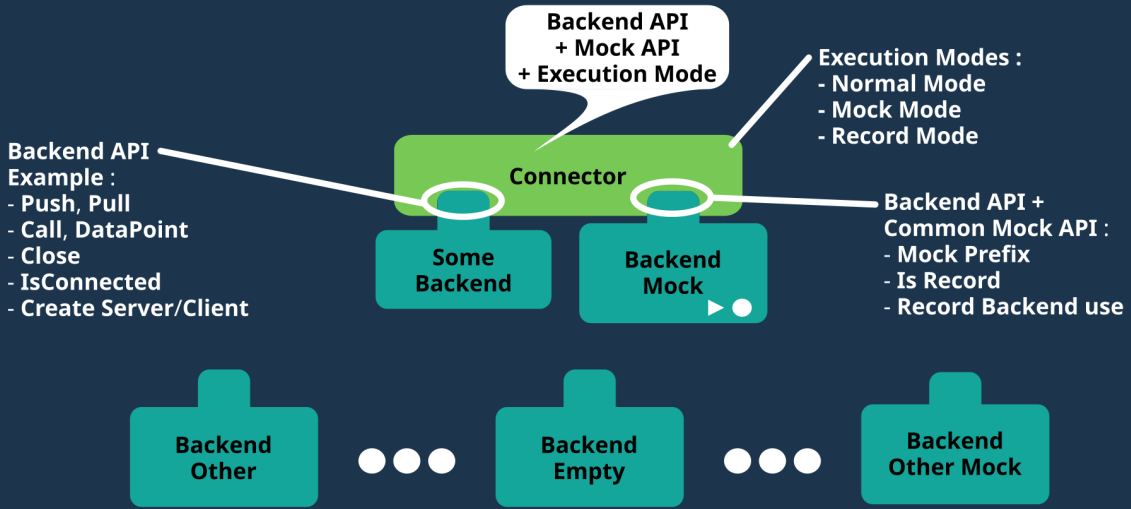

Double Backend Clock

Double Backend Clock

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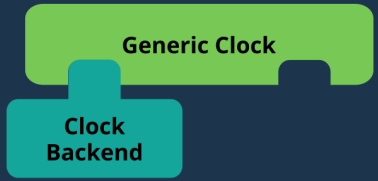

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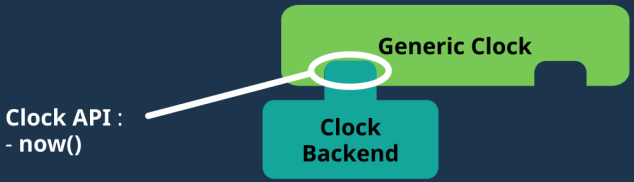
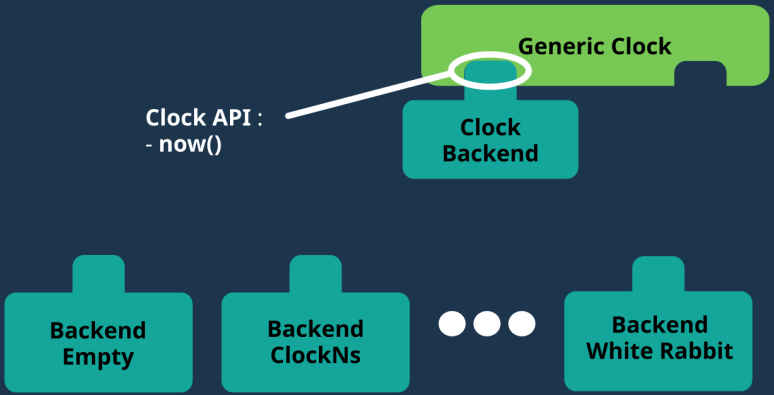
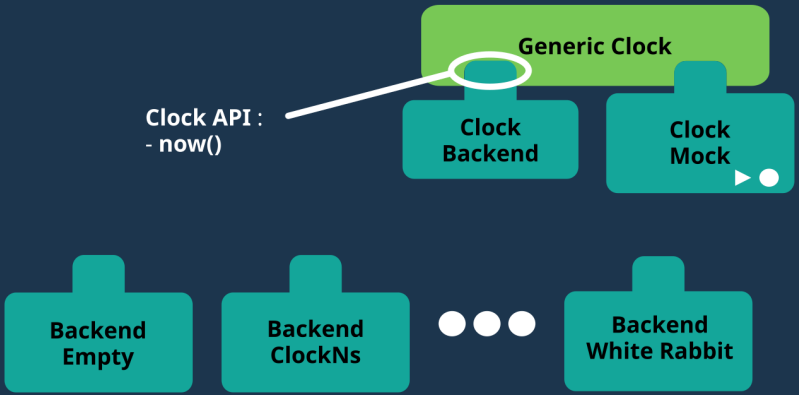


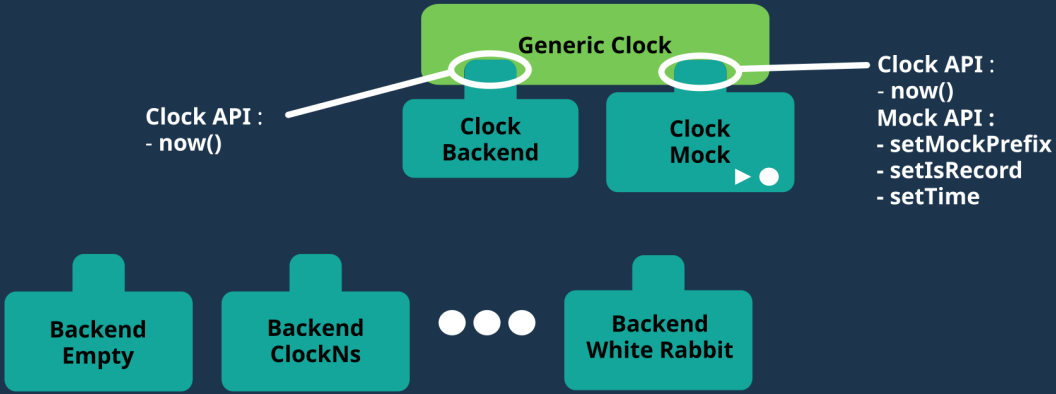
Double Backend Clock



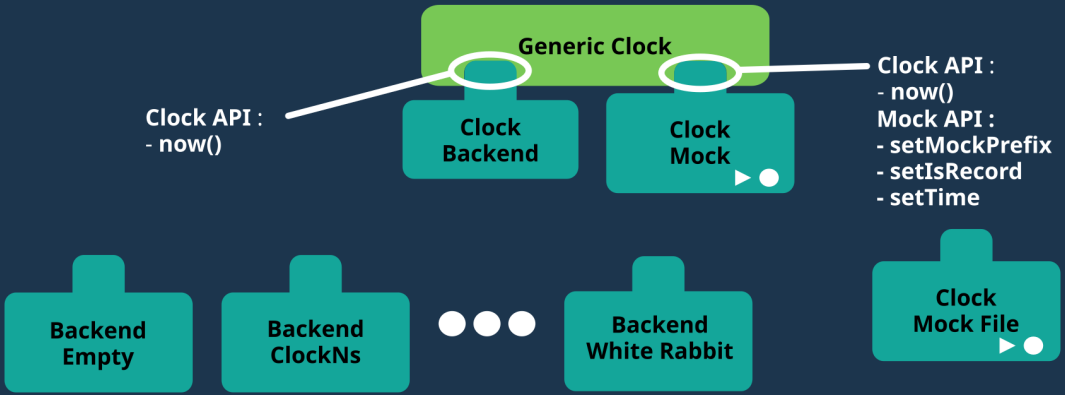
Double Backend Clock



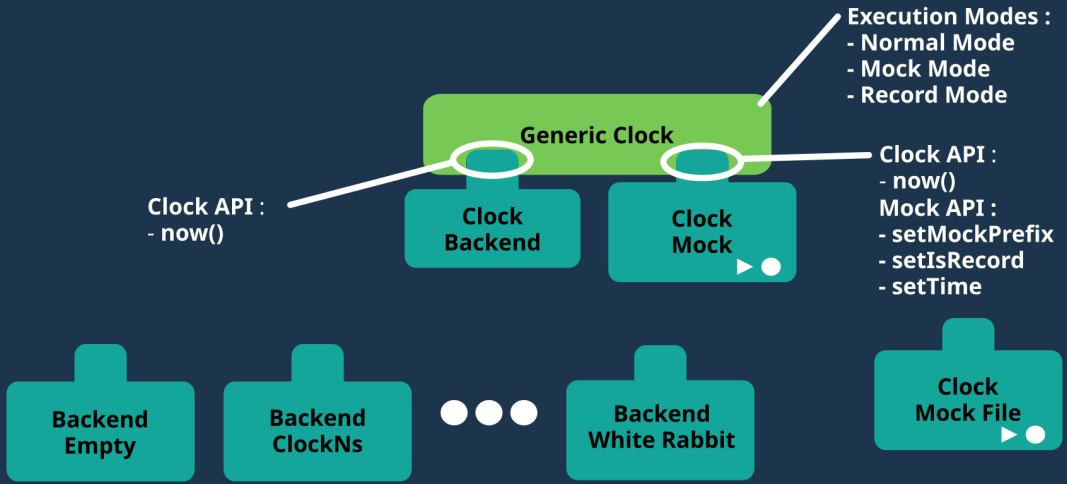
Double Backend Clock



Double Backend Clock



Double Backend Clock



Double Backend Socket

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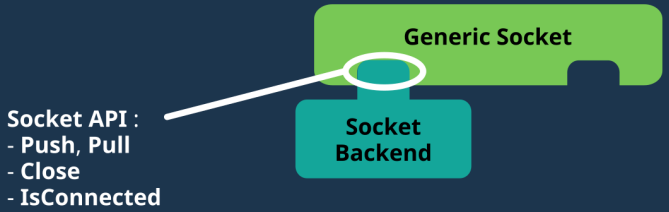

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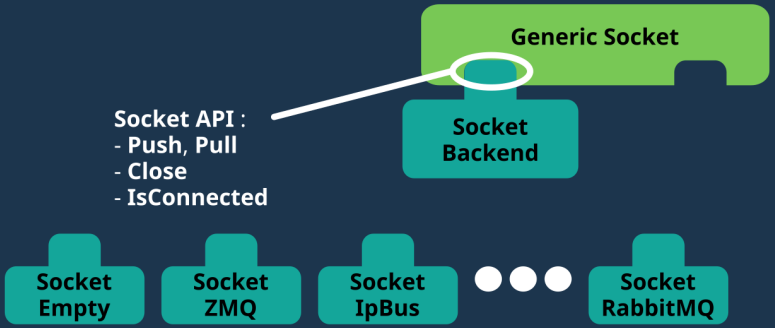
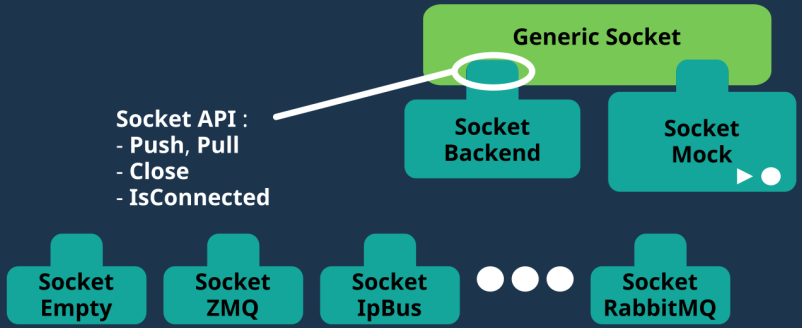
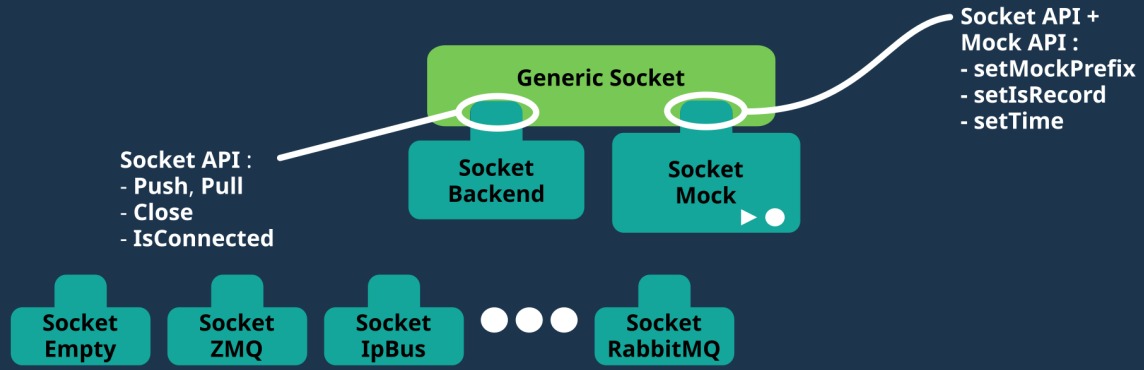


Double Backend Socket



Double Backend Socket



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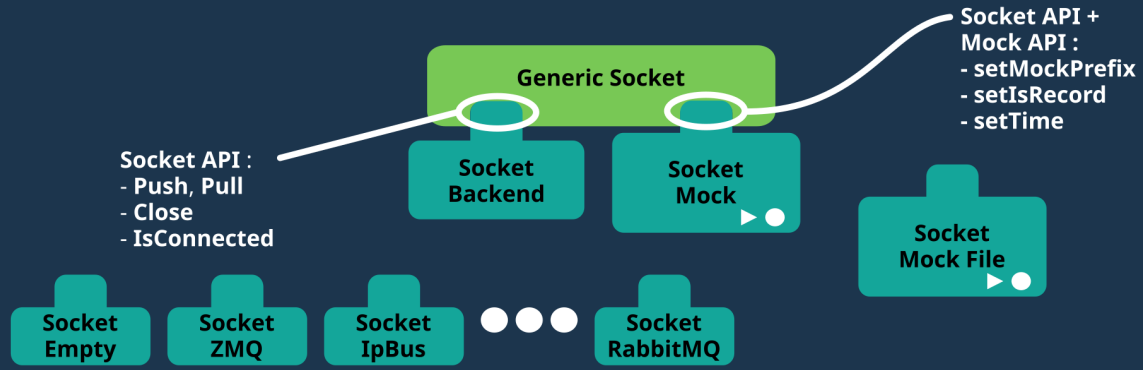

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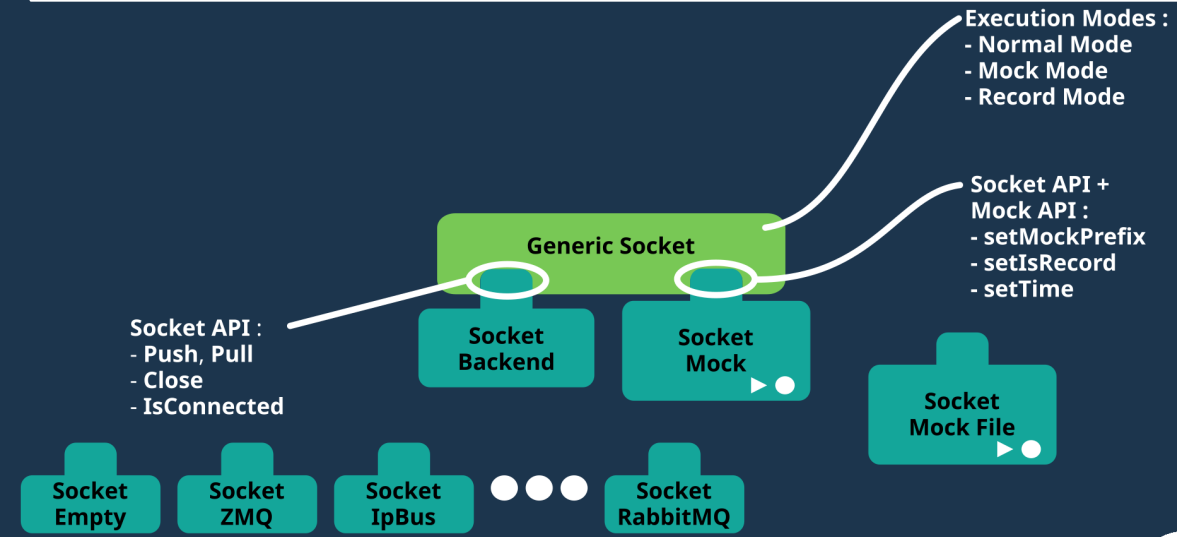

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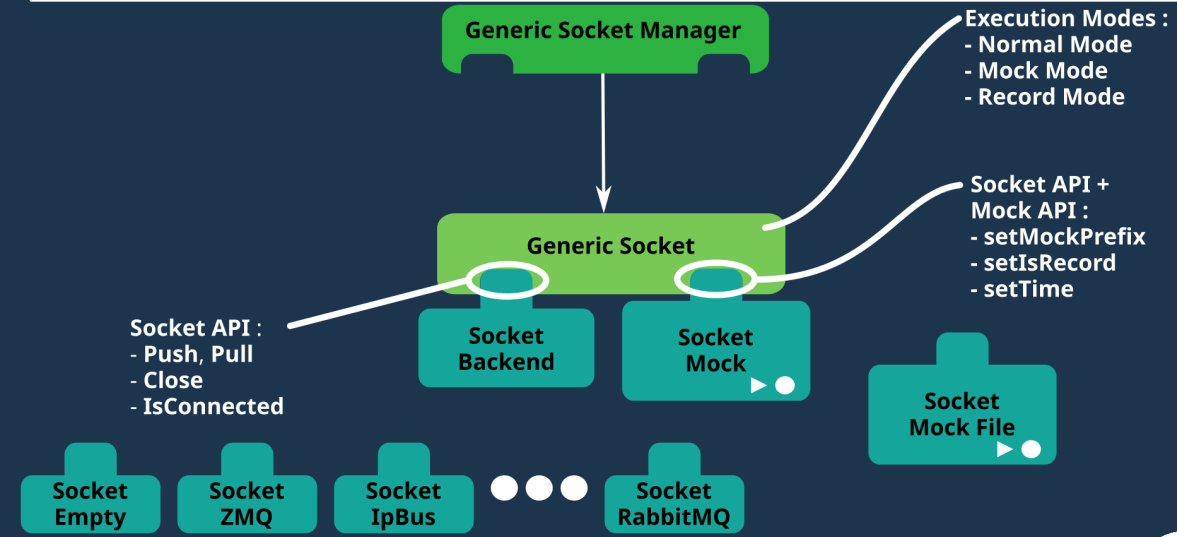

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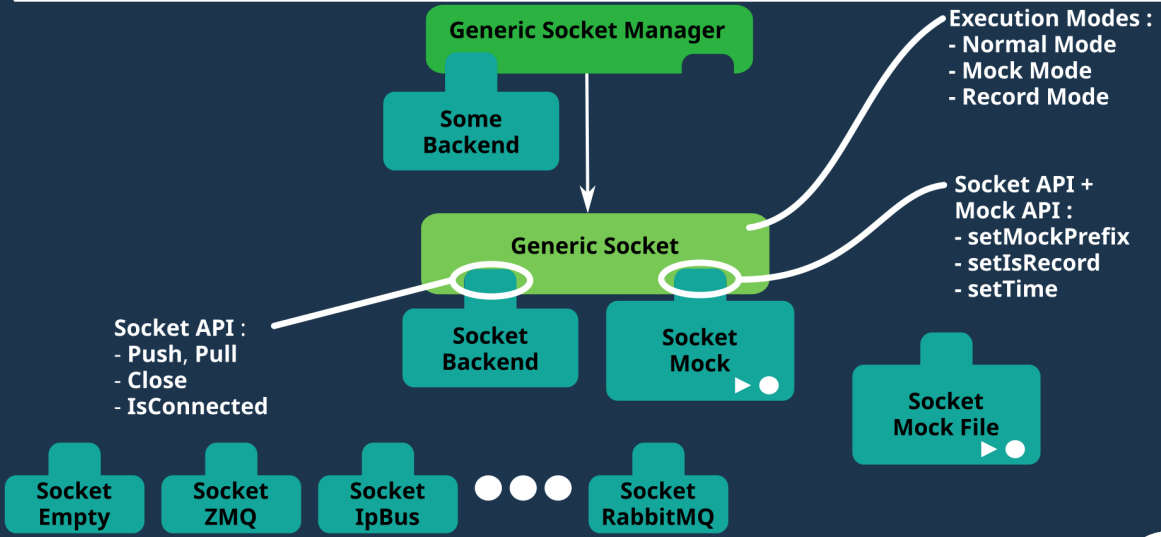

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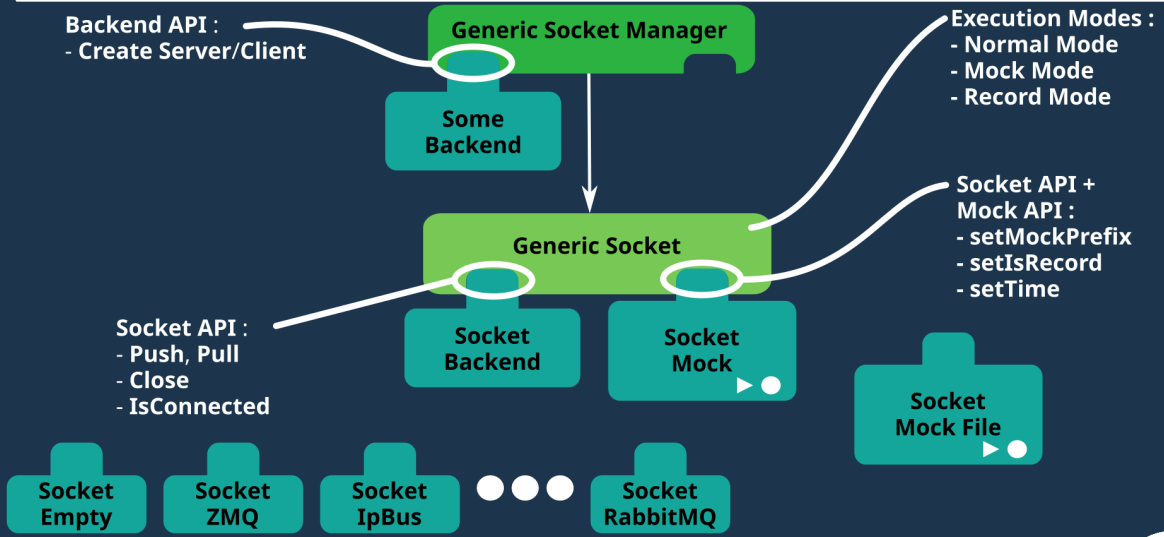

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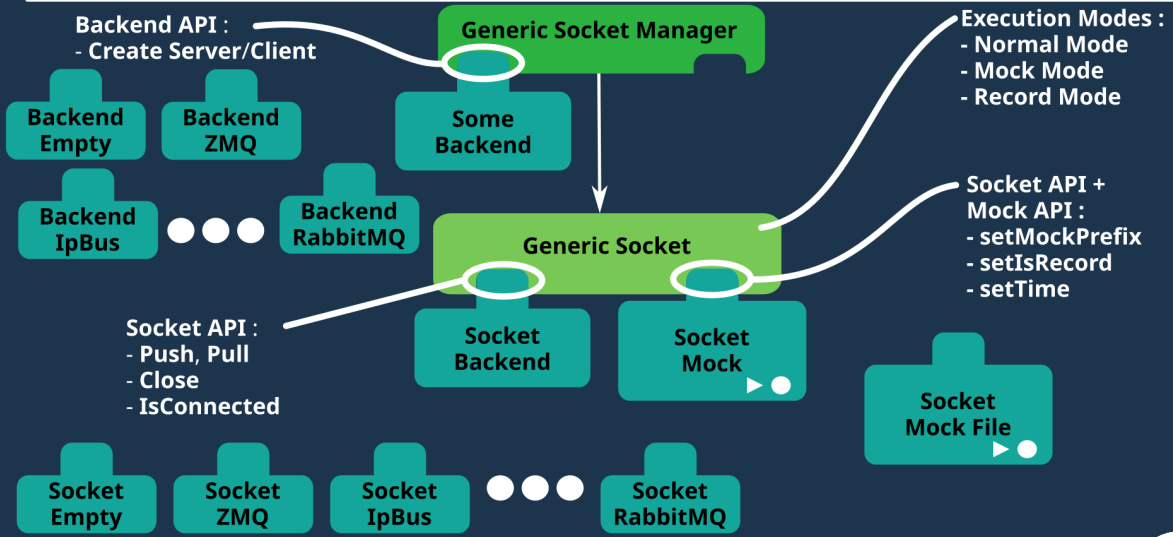

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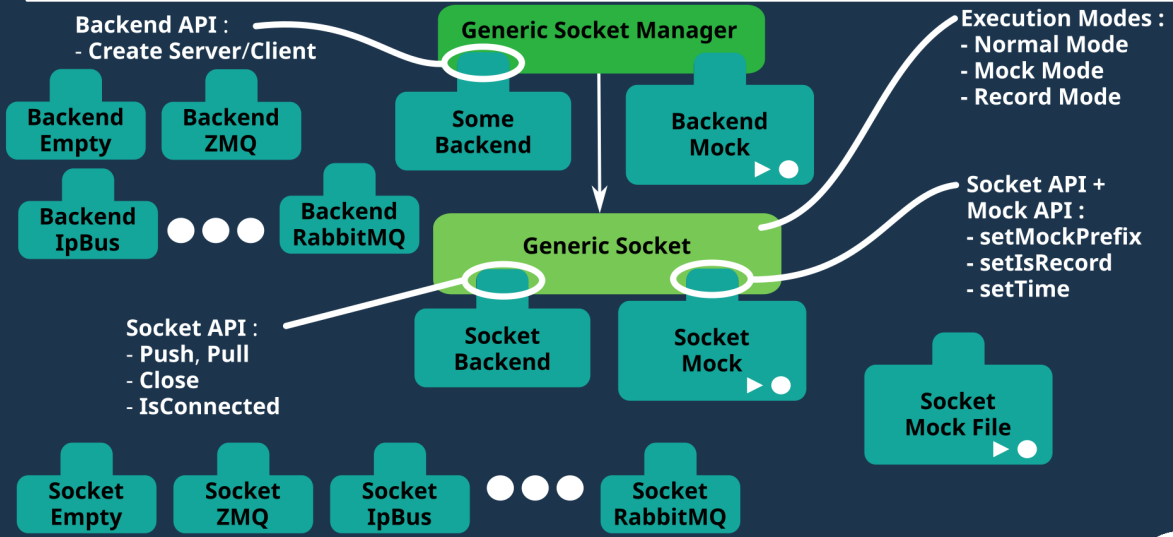

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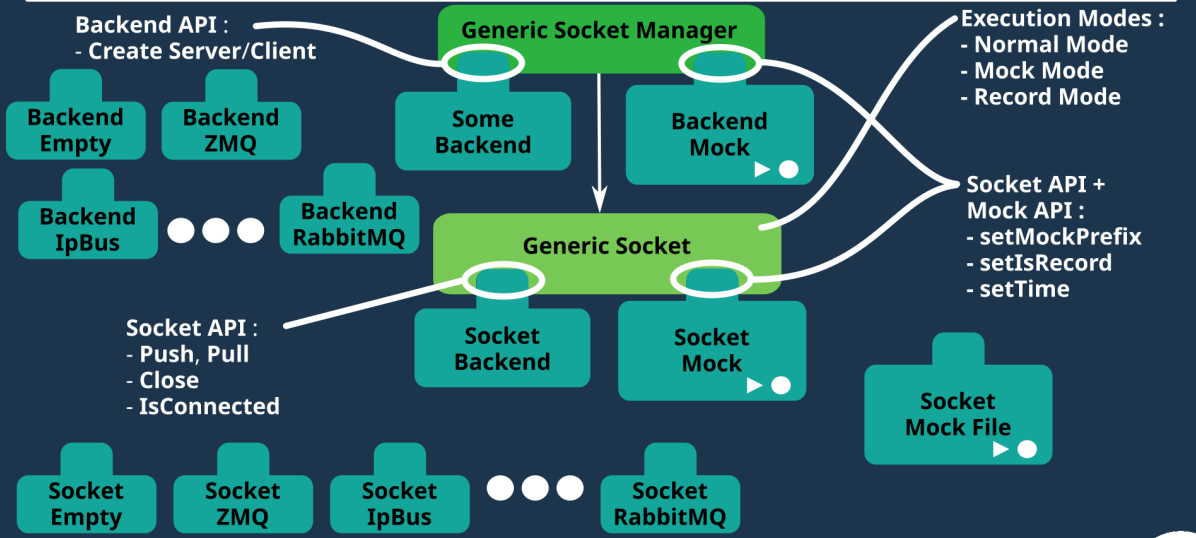

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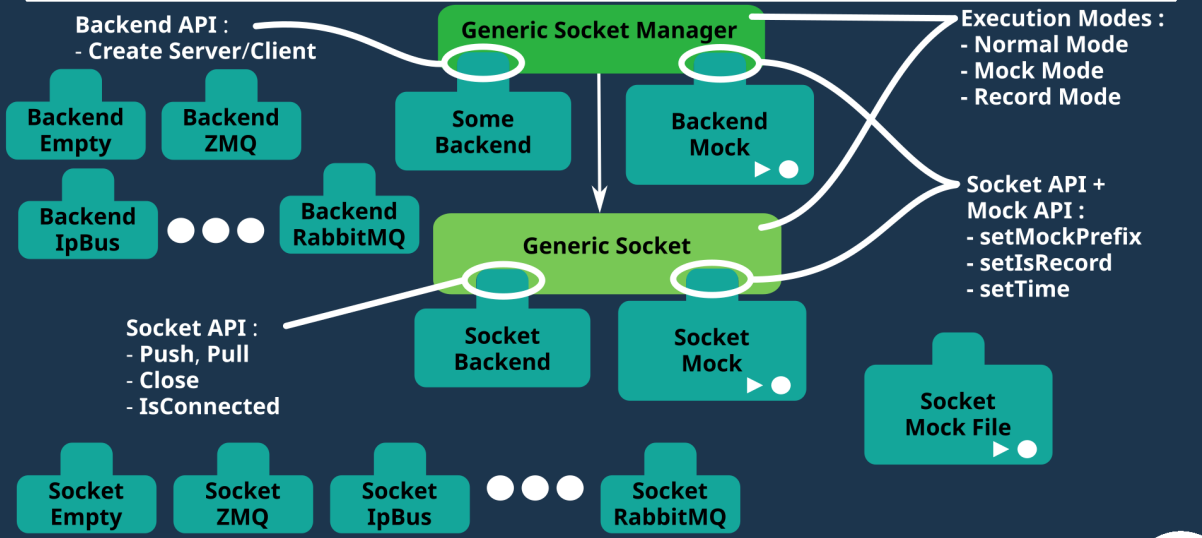

Generic Mock

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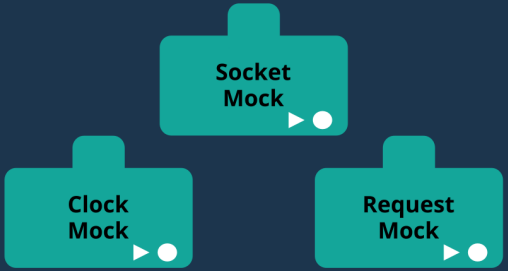

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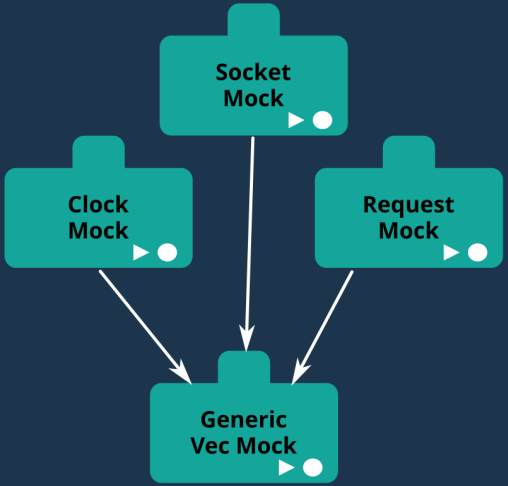

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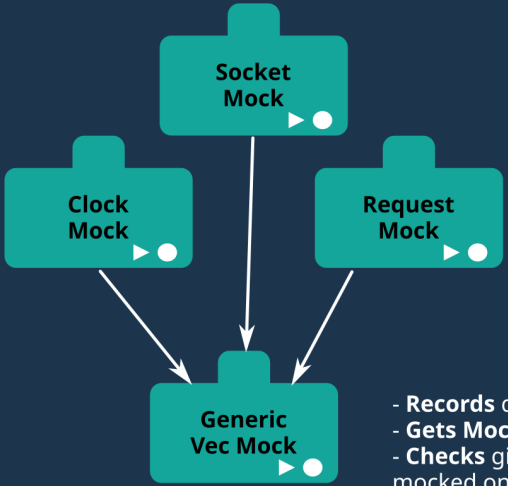

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- **Human readable feedback** if data are different

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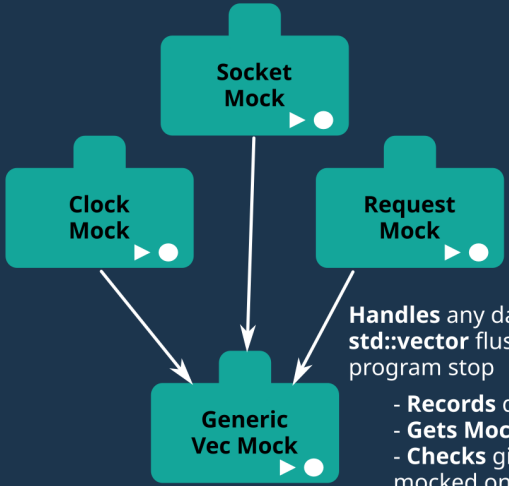

Handles any data type in a **std::vector** flushed at program stop

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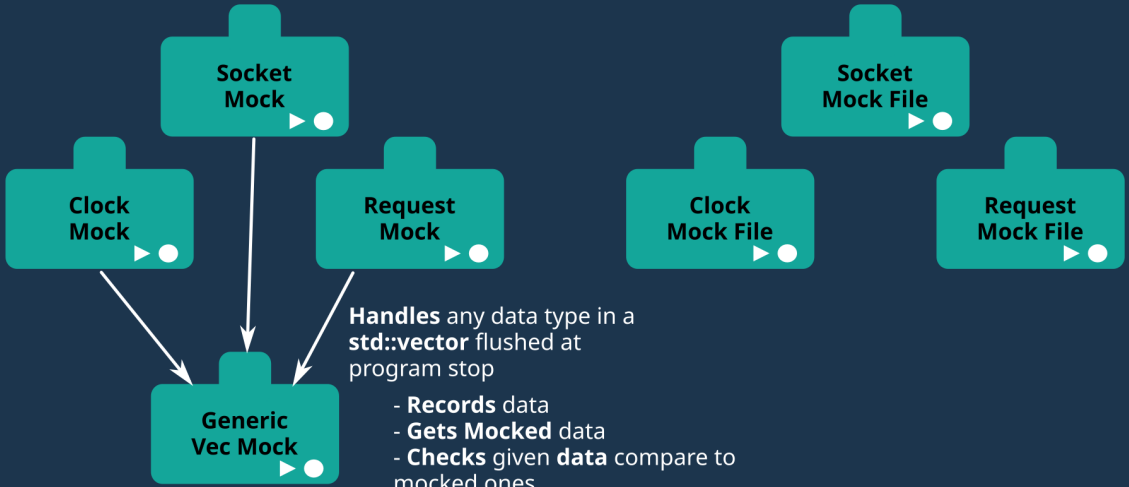

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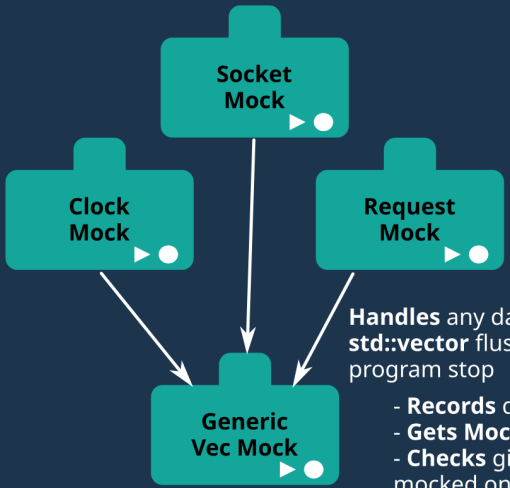

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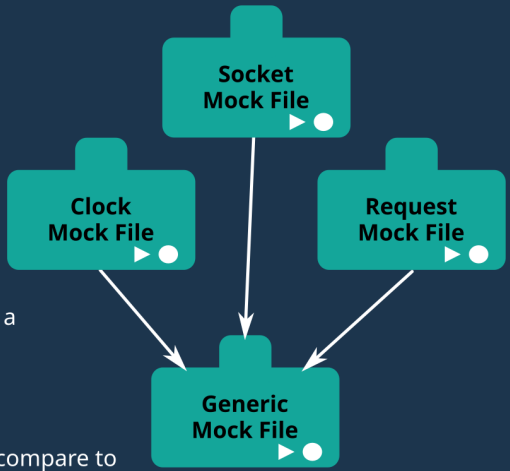

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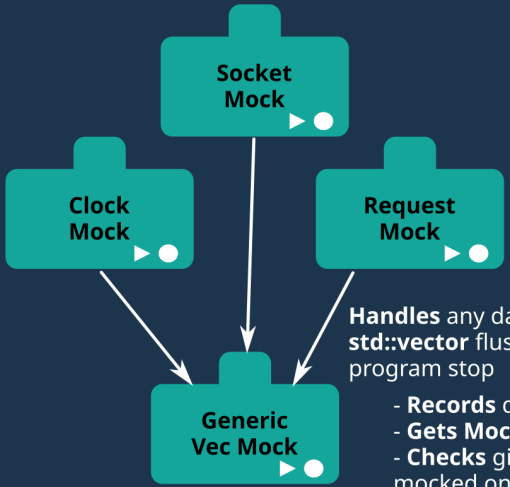

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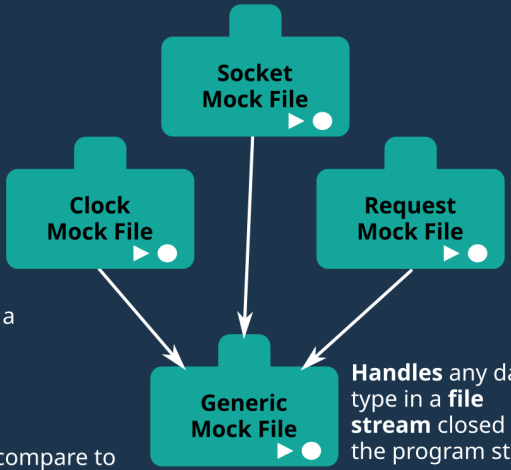
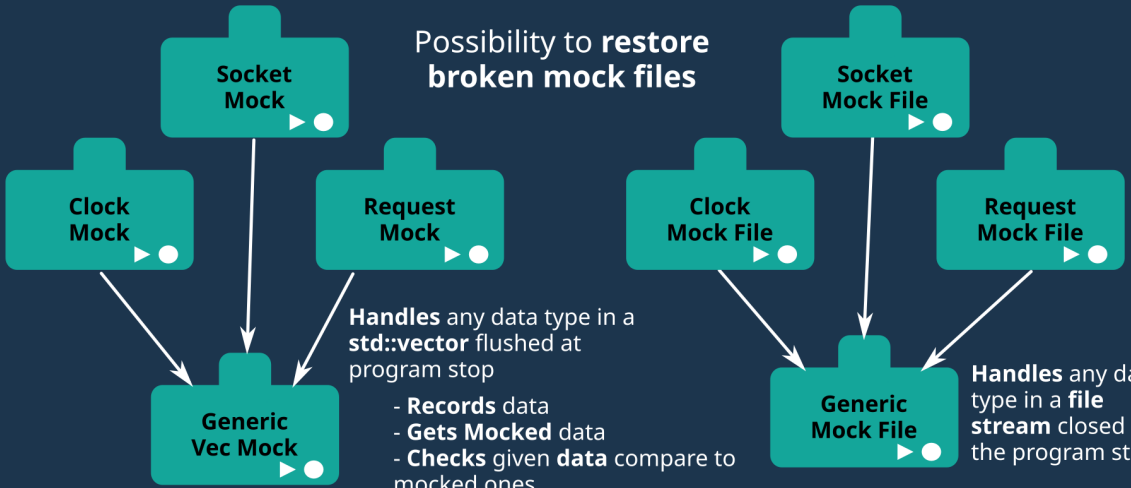


Handles any data type in a **file stream** closed at the program stop

Generic Mock



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What is **available now** (C++, Rust, and Python soon) :

- C++ Project : `https://gitlab.in2p3.fr/CTA-LAPP/PHOENIX_LIBS2/serialize-io`
- C++ Project : `https://gitlab.in2p3.fr/CTA-LAPP/PHOENIX_LIBS2/network`
- C++ Project : `https://gitlab.in2p3.fr/CTA-LAPP/PHOENIX_LIBS2/clock`