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契约测试

微服务独立交付的金钥匙

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微服务架构是一种架构模式，它提倡将单一应用程序划分成一组小的服务，每个服务运行在其独立的进程中，服务间采用轻量级的通信机制互相沟通（通常是基于HTTP协议的RESTful API）。每个服务都围绕着具体业务进行构建，并且能够被独立的部署到生产环境、类生产环境等。

http://martinfowler.com/articles/microservices.html

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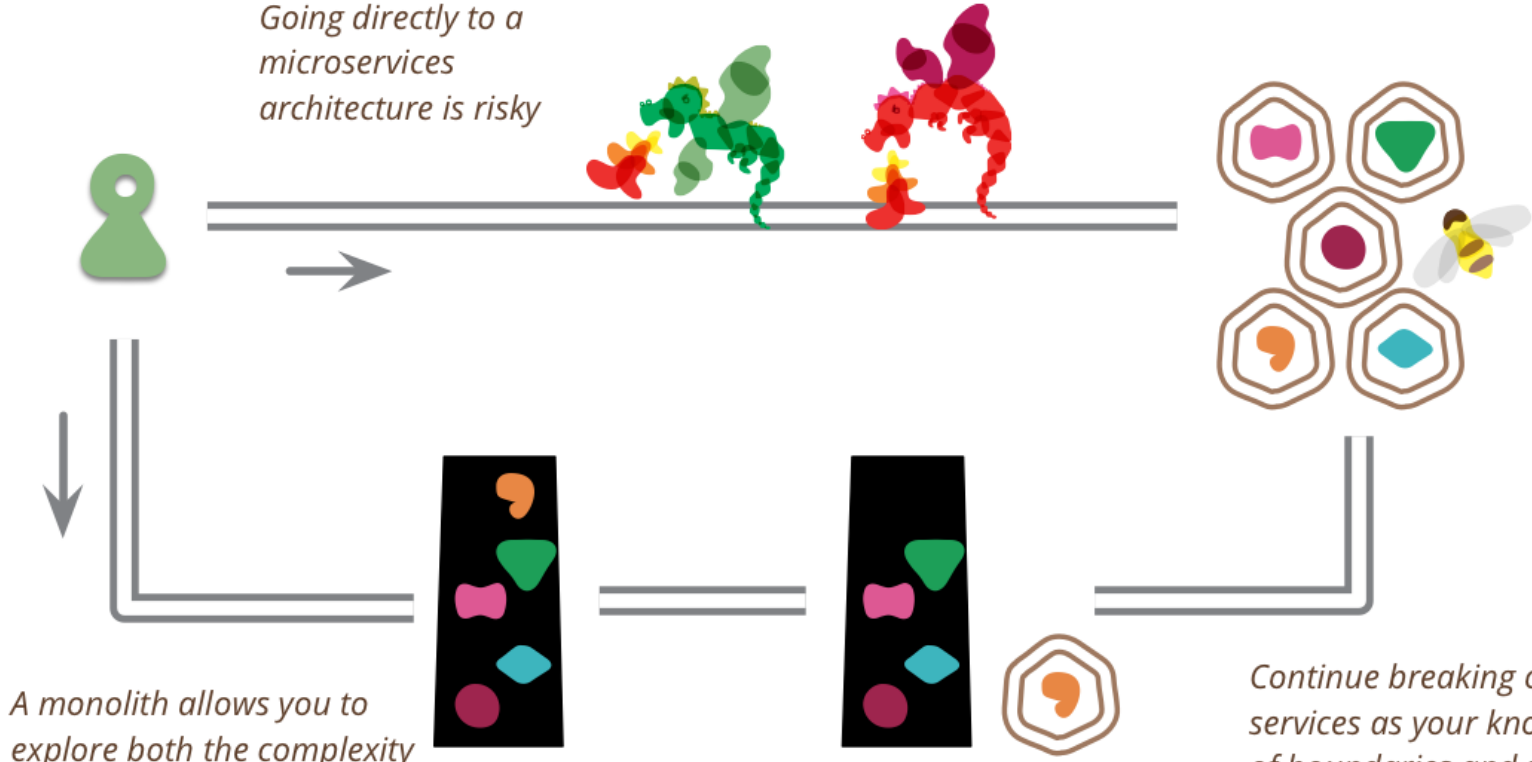
- 组件化
- 弹性架构
- 去中心化


Going directly to a microservices architecture is risky
A monolith allows you to explore both the complexity of a system and its component boundaries
As complexity rises start breaking out some microservices
Continue breaking out services as your knowledge of boundaries and service management increases

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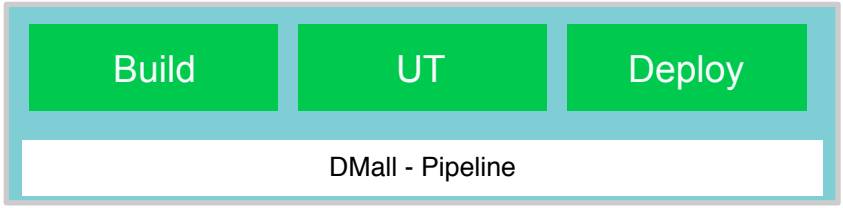
怎么说呢？

这样，我给你举个栗子吧！


ONLINE
SHOPPING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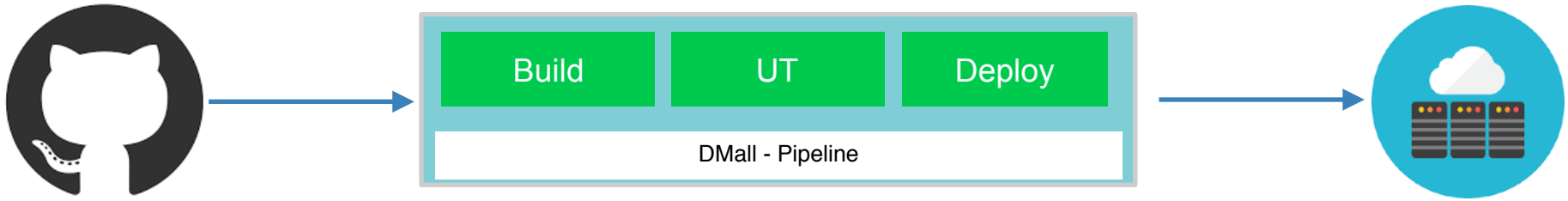
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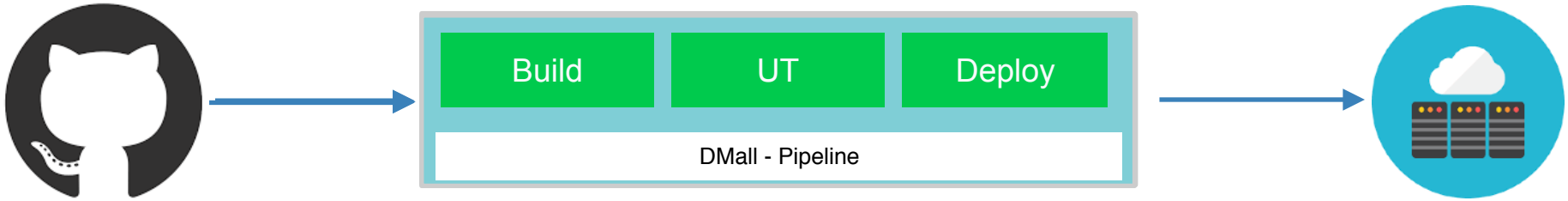
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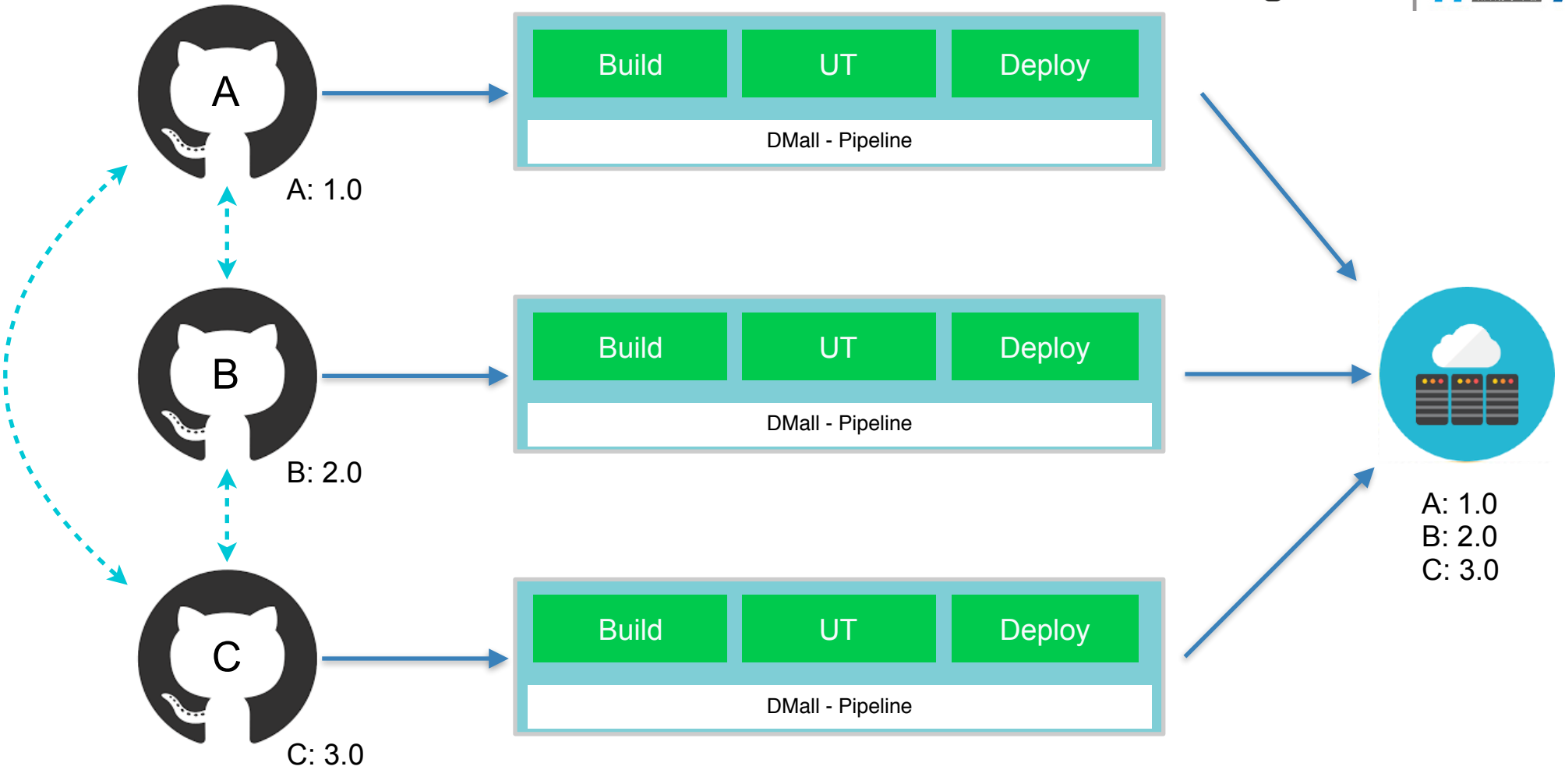
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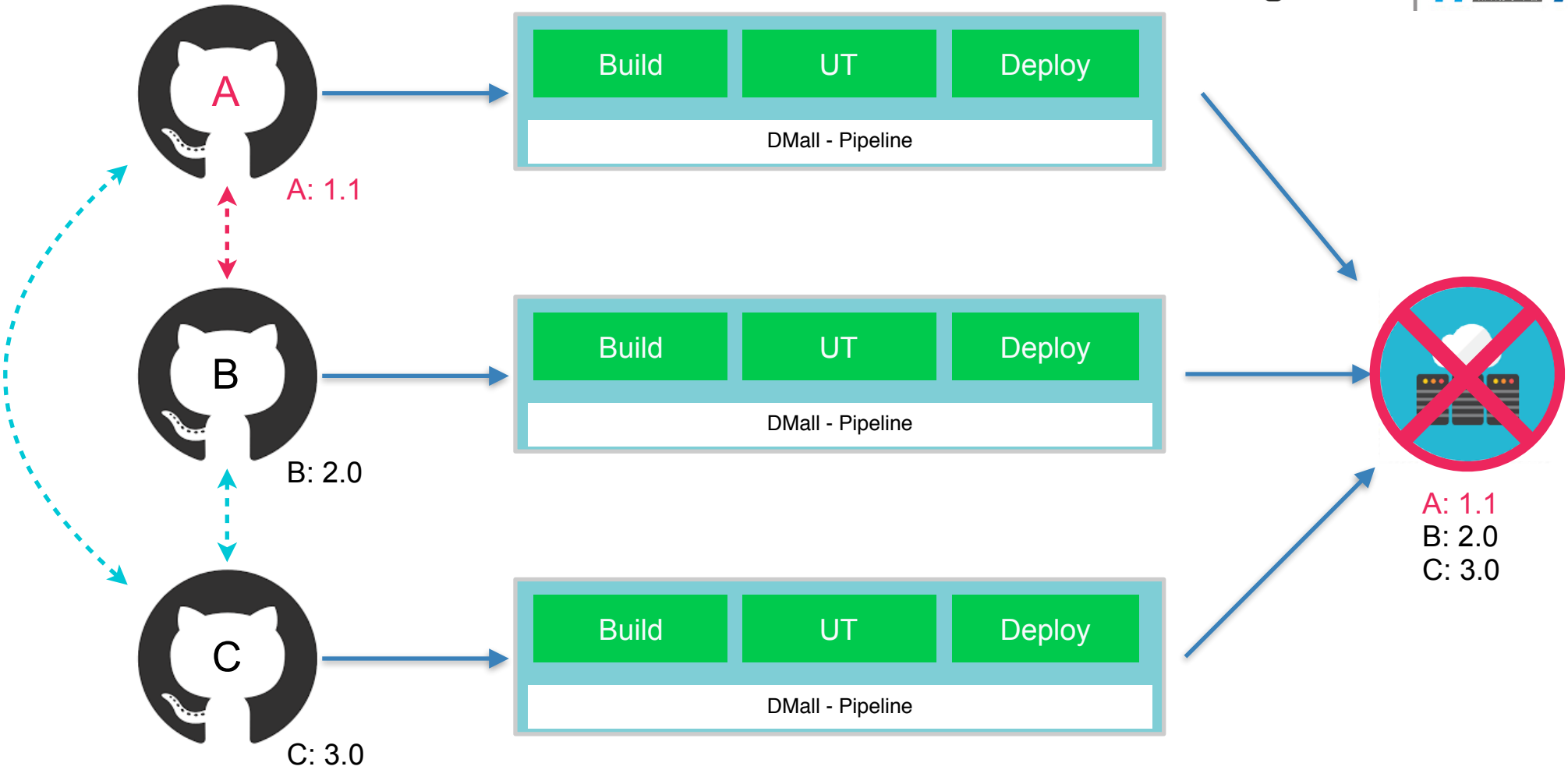
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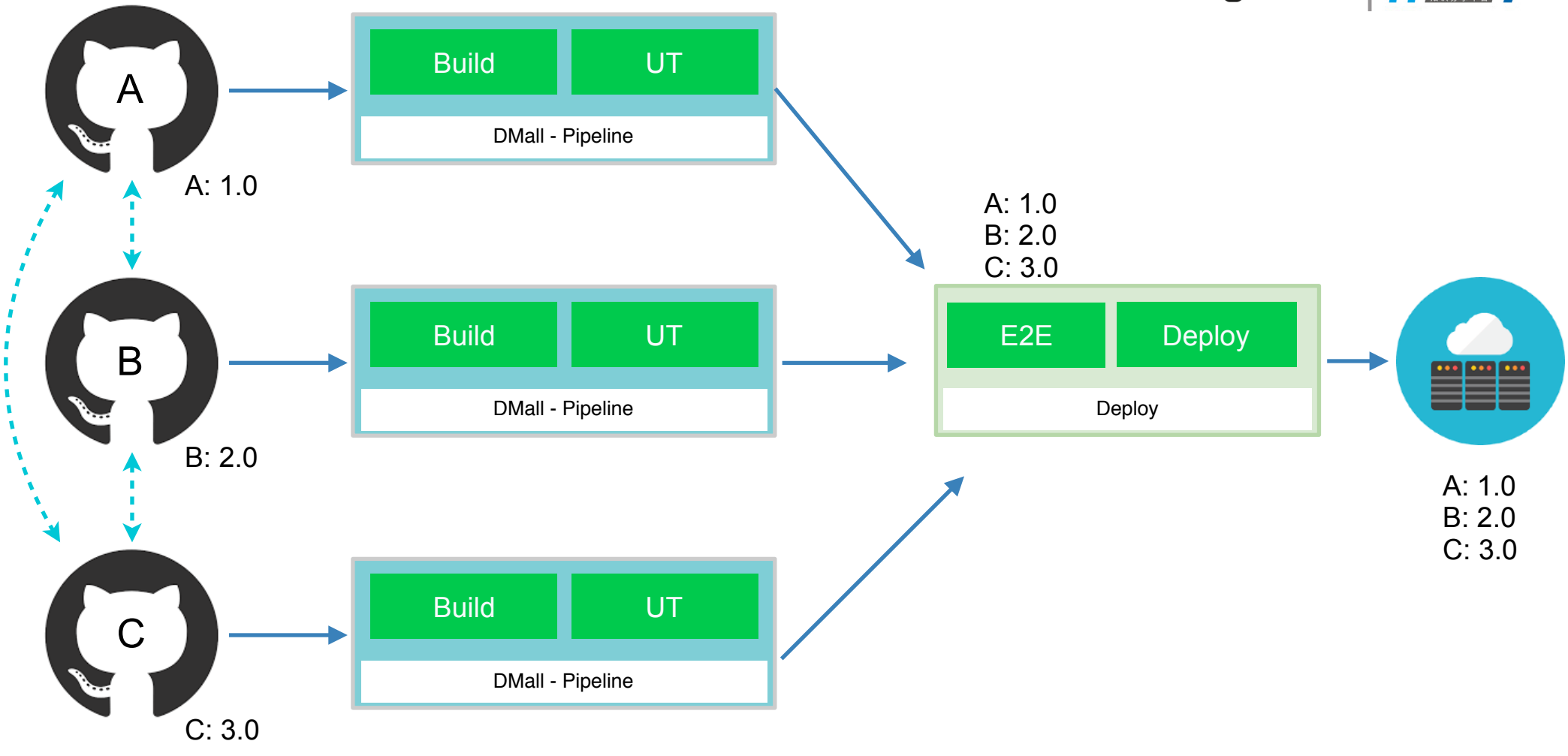
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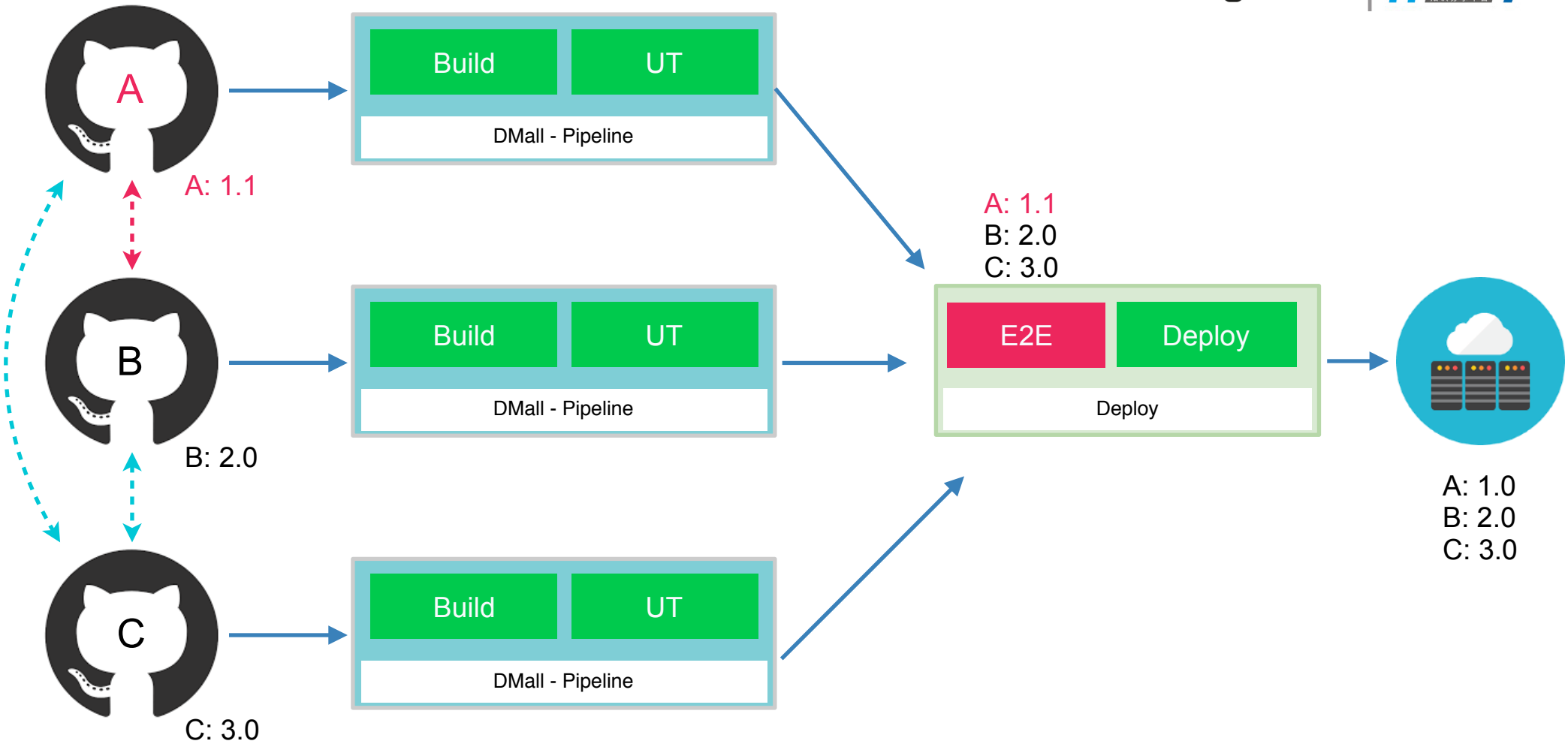
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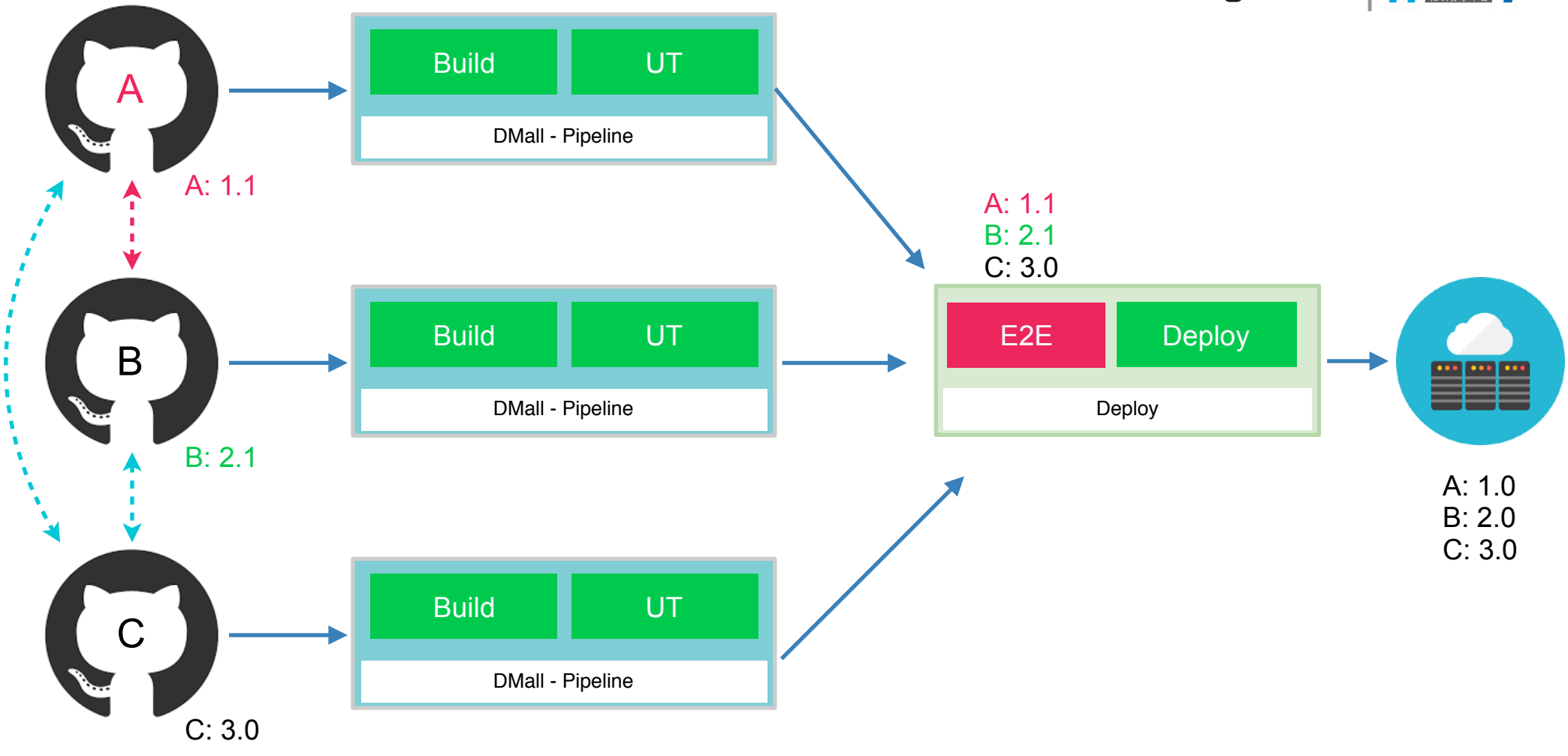
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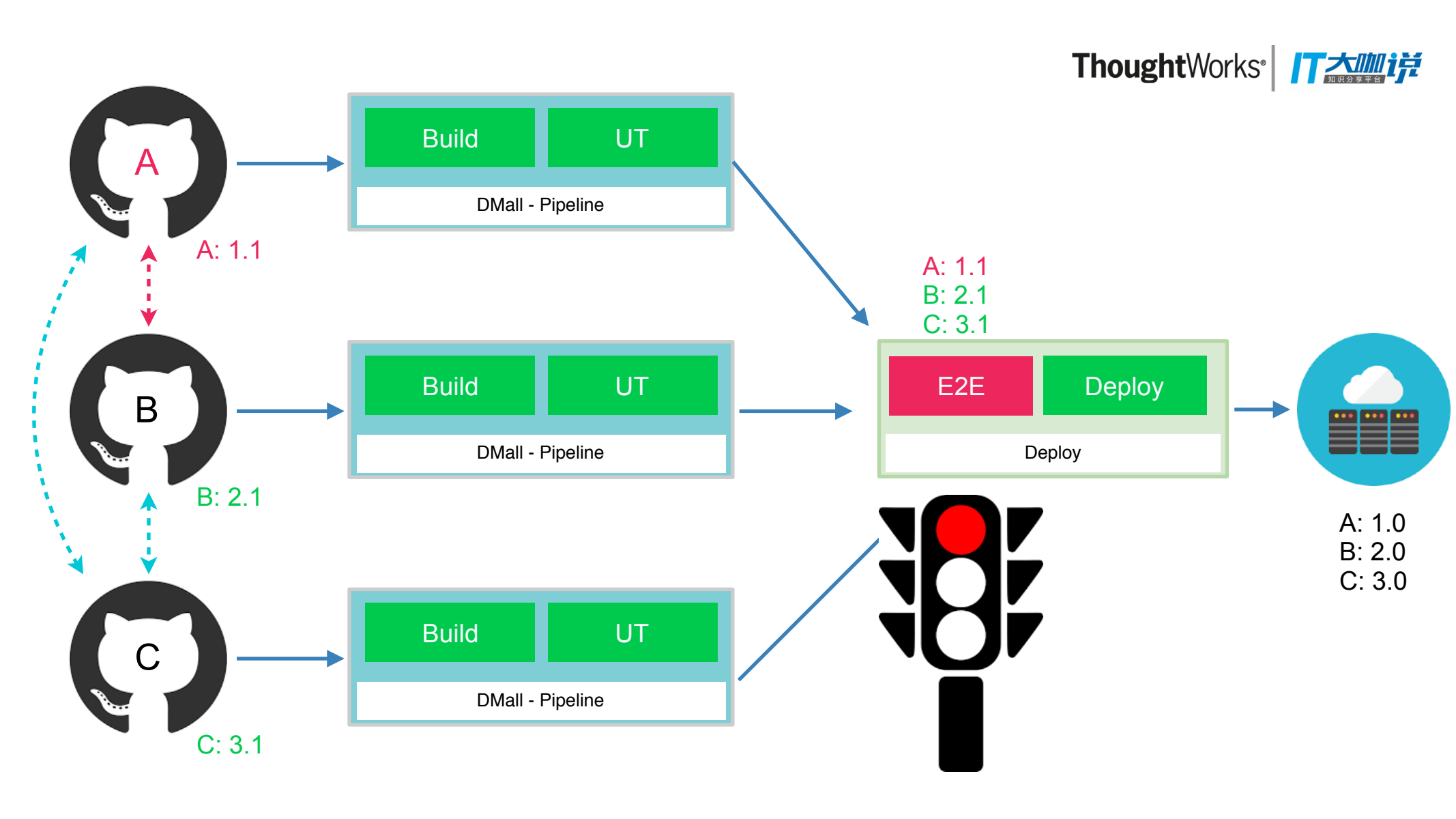
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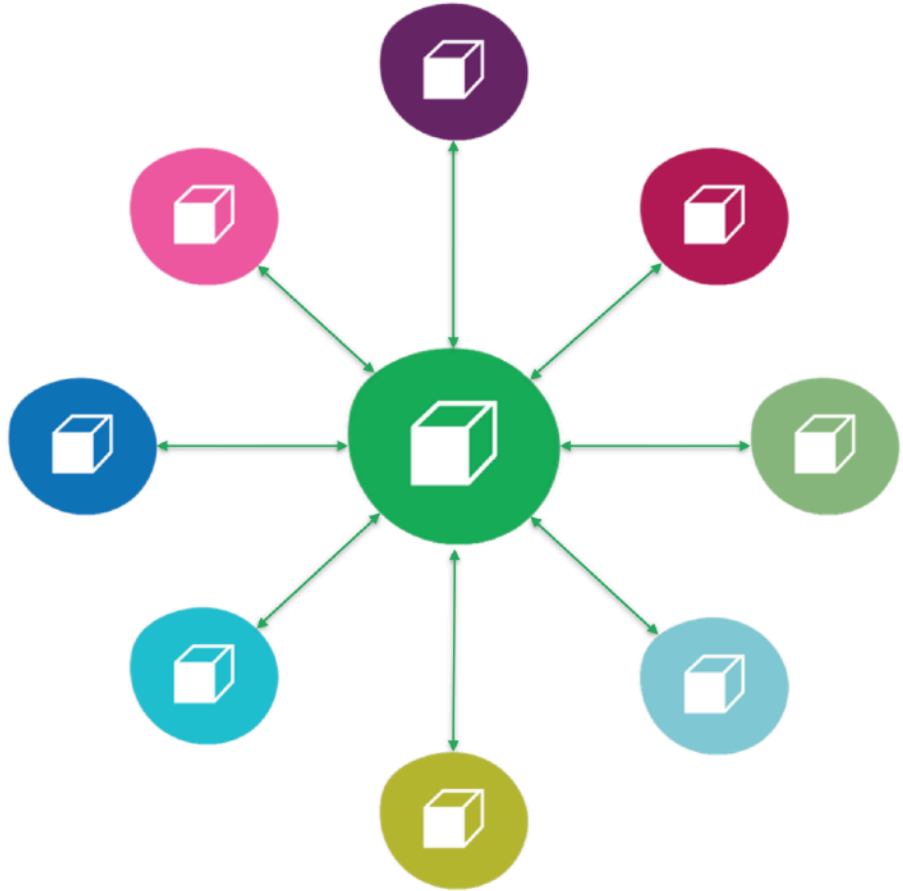

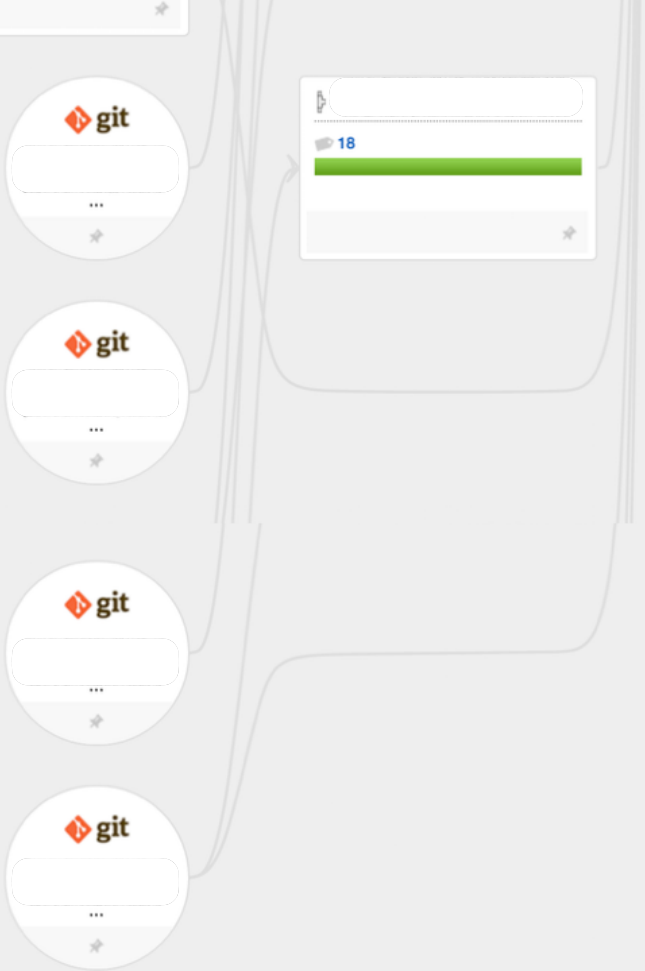

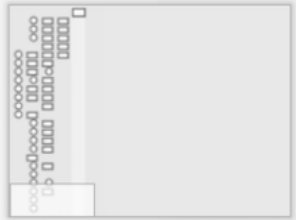

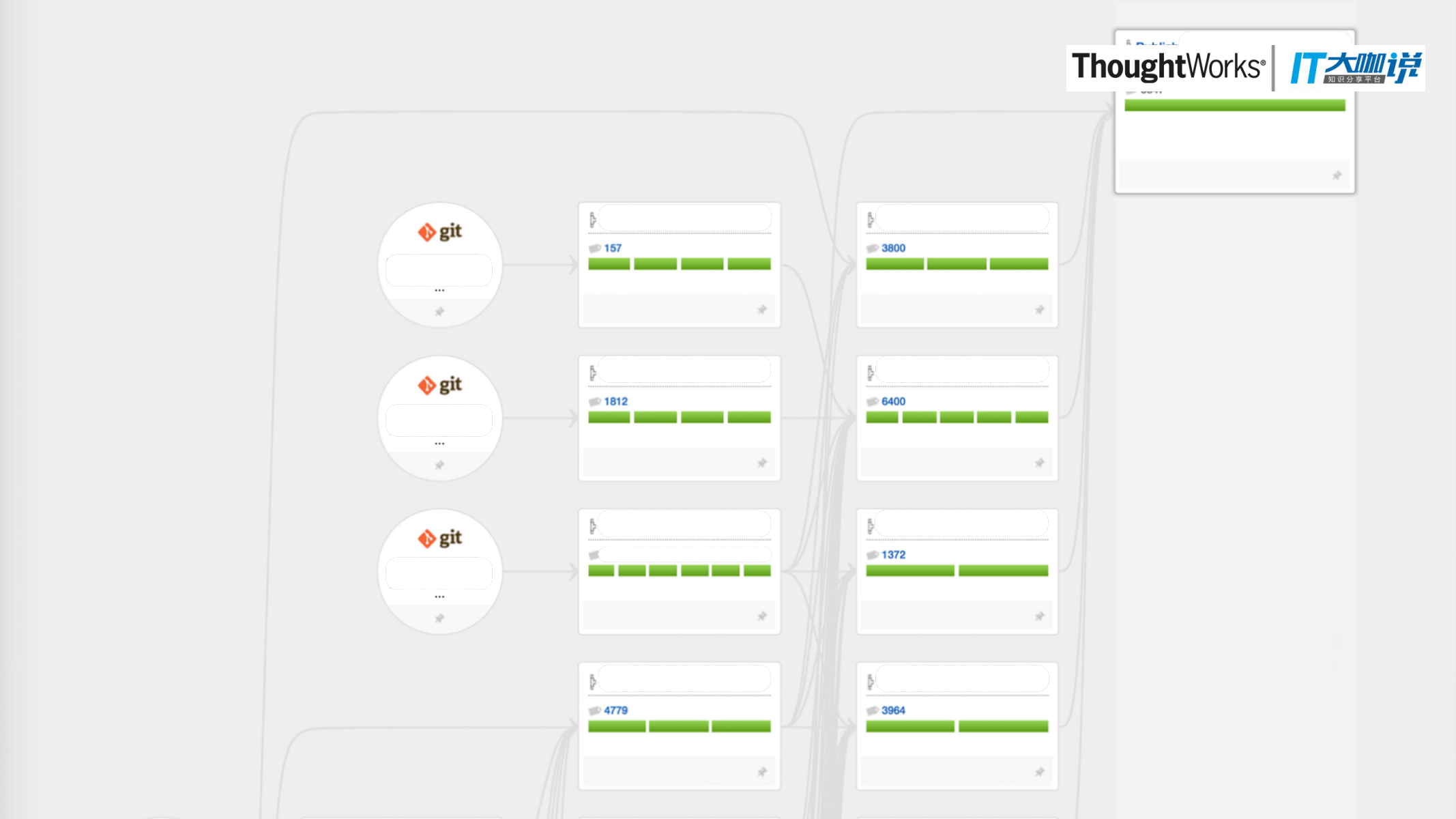
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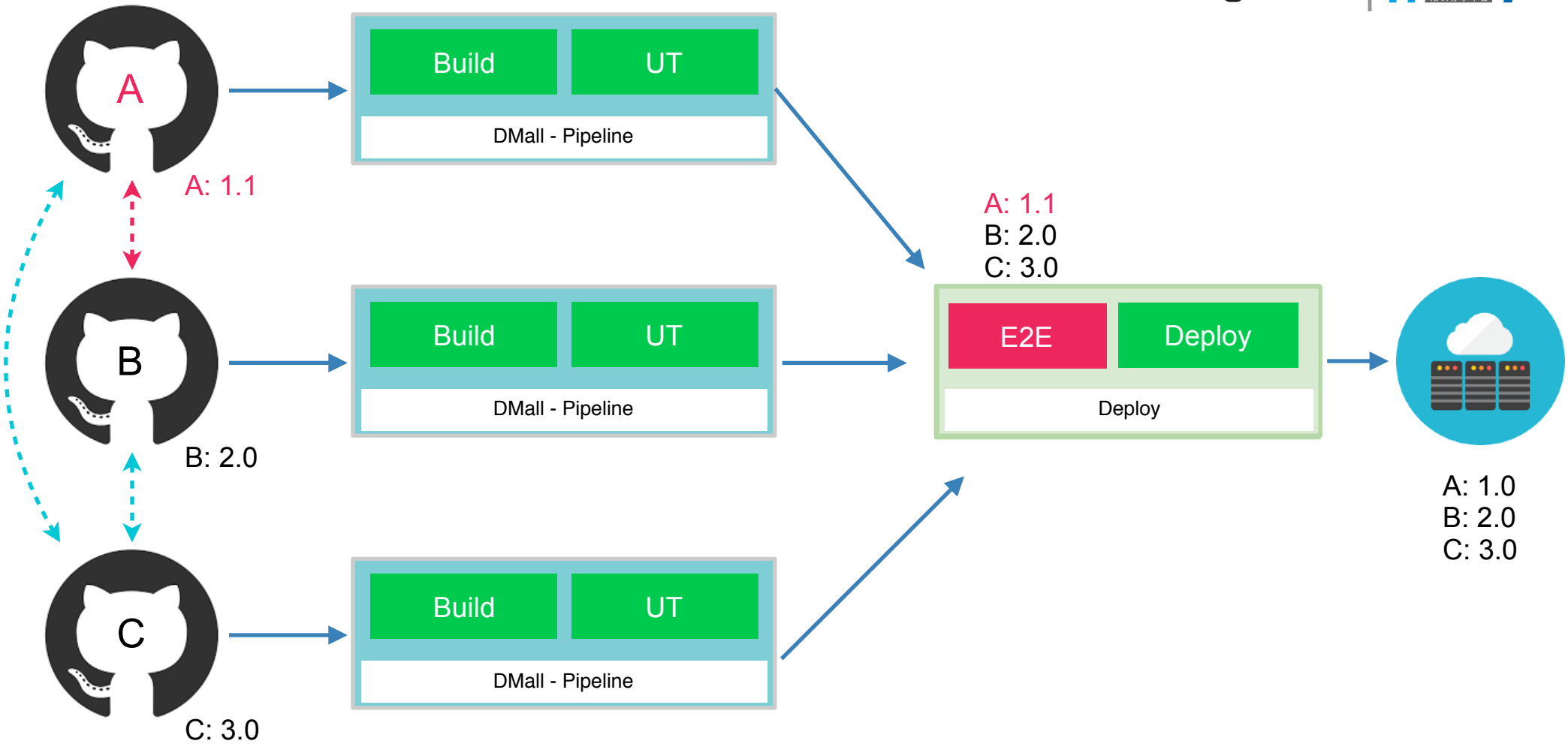
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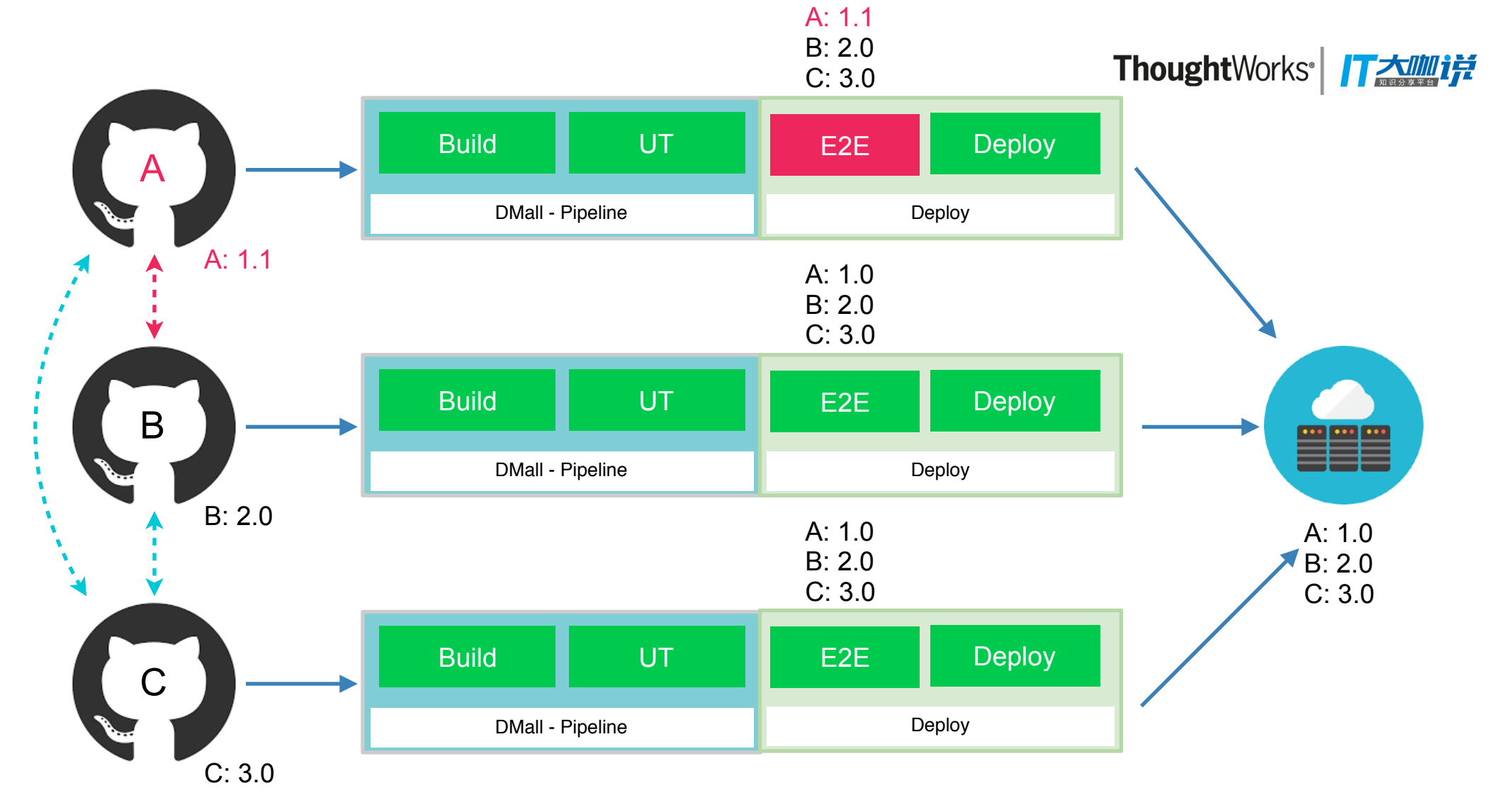
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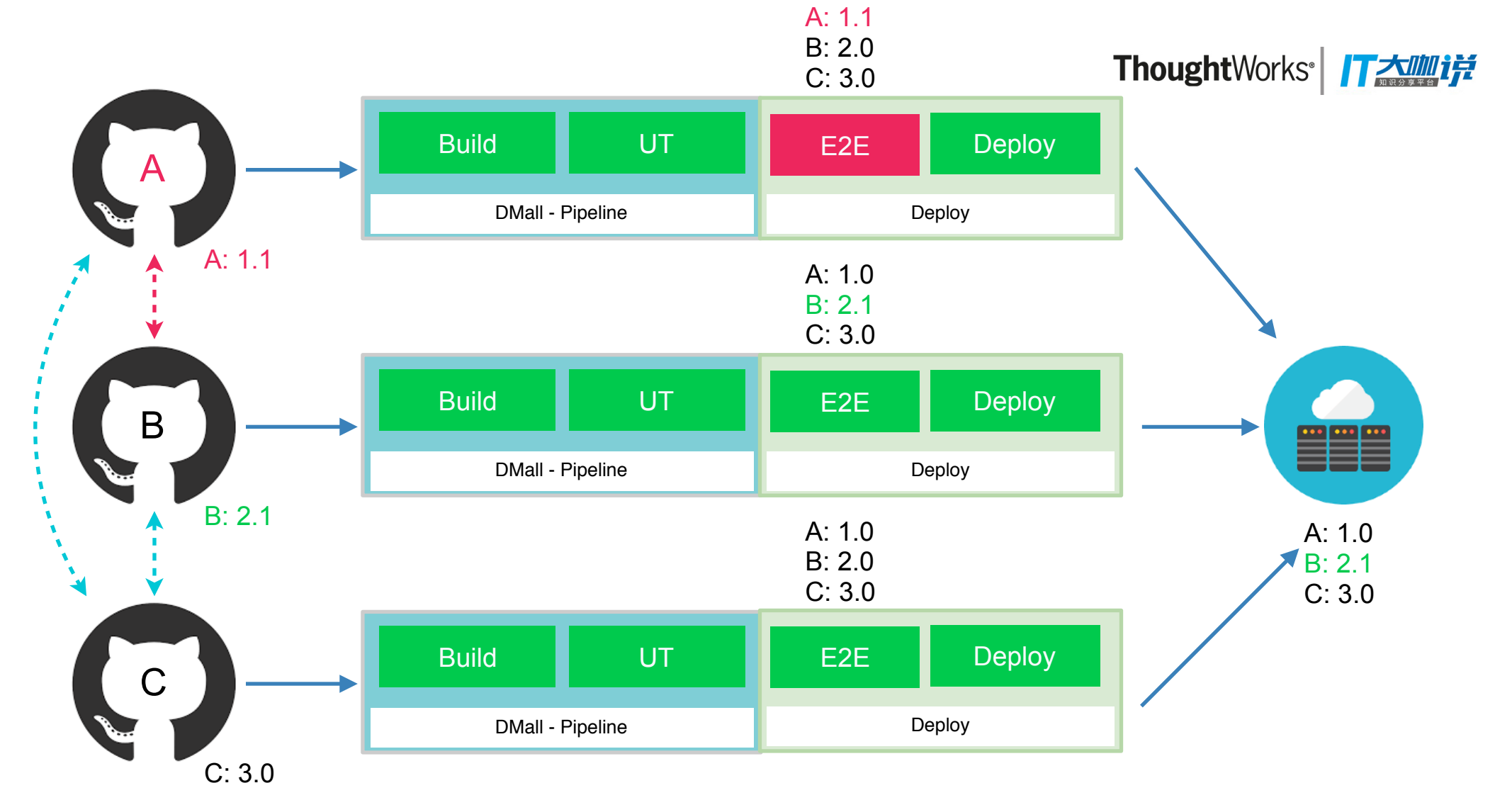
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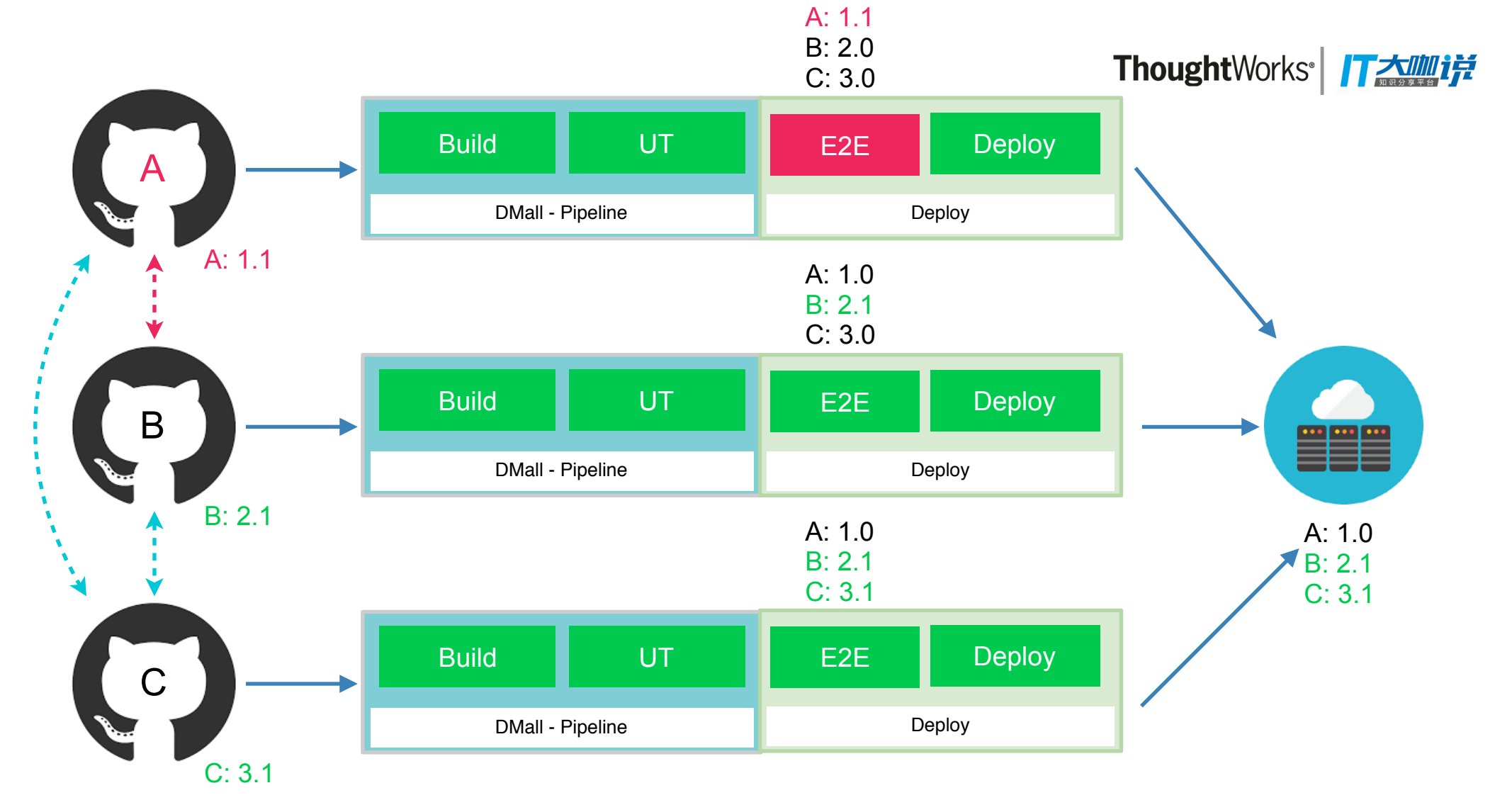
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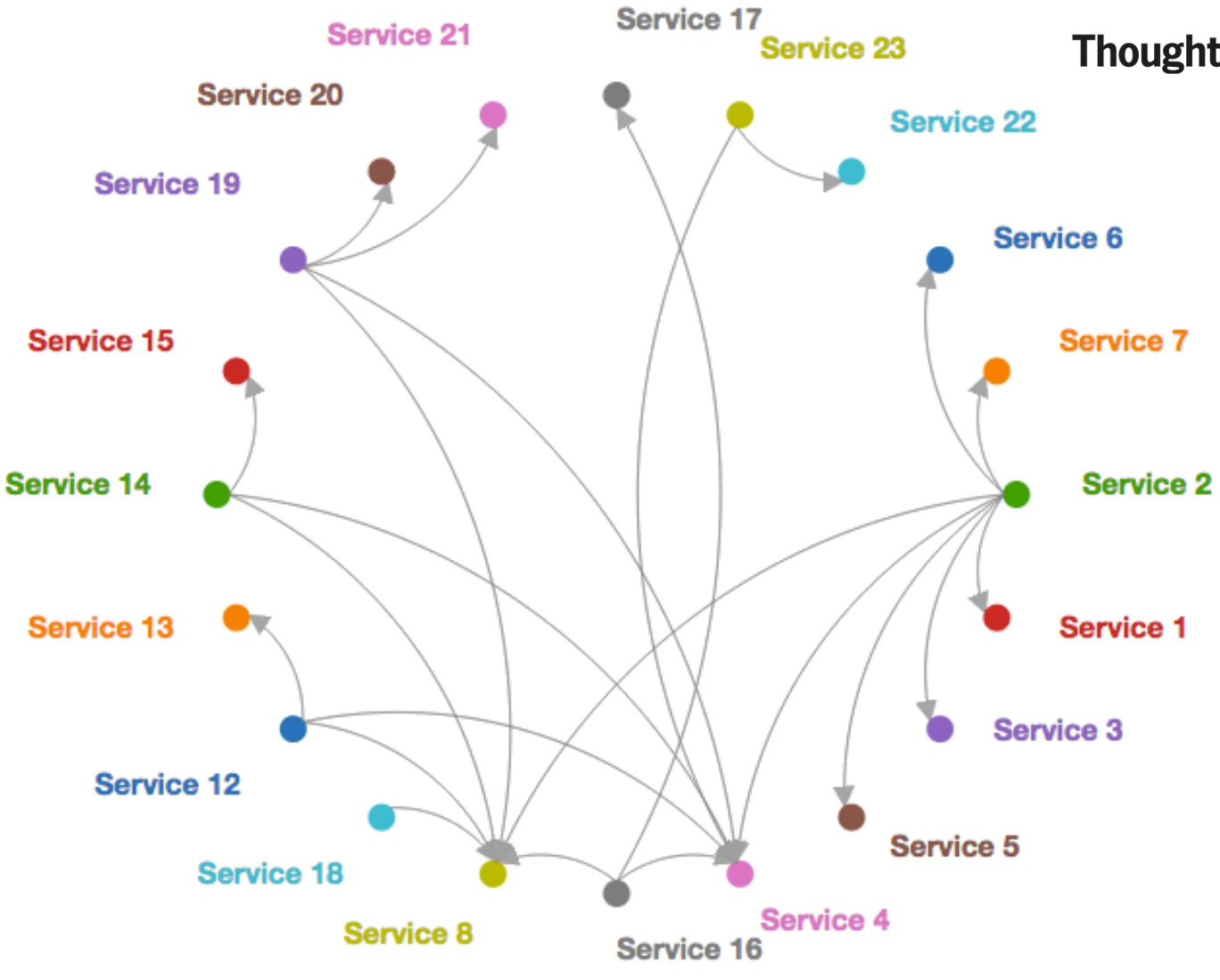

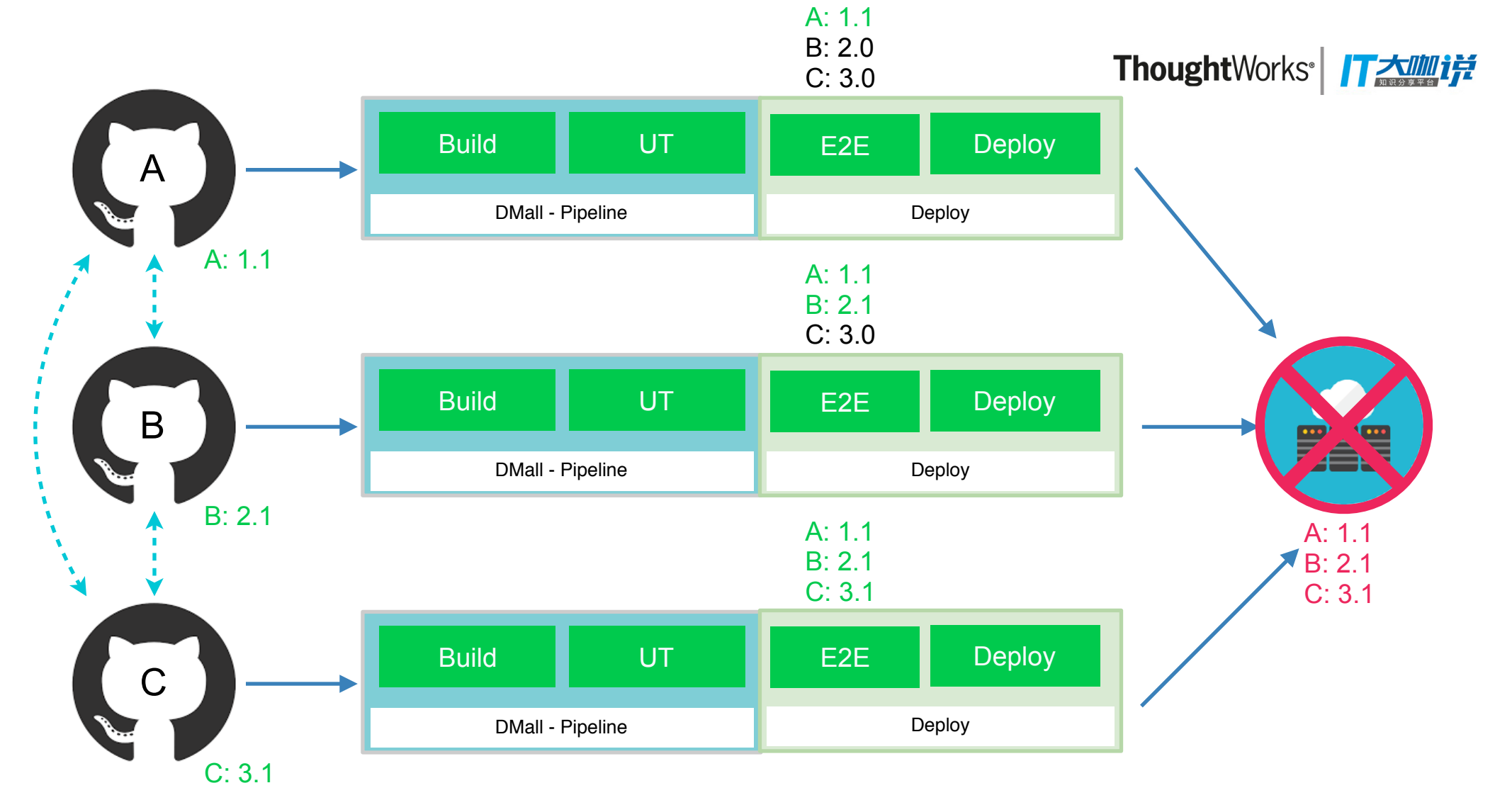
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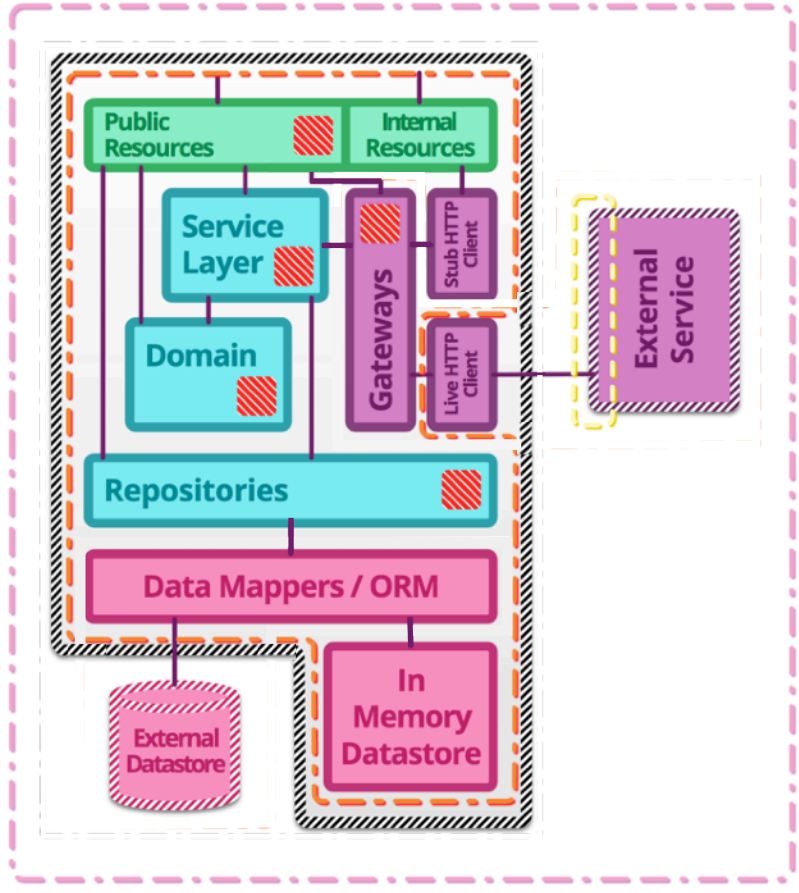
TESTING STRATEGY

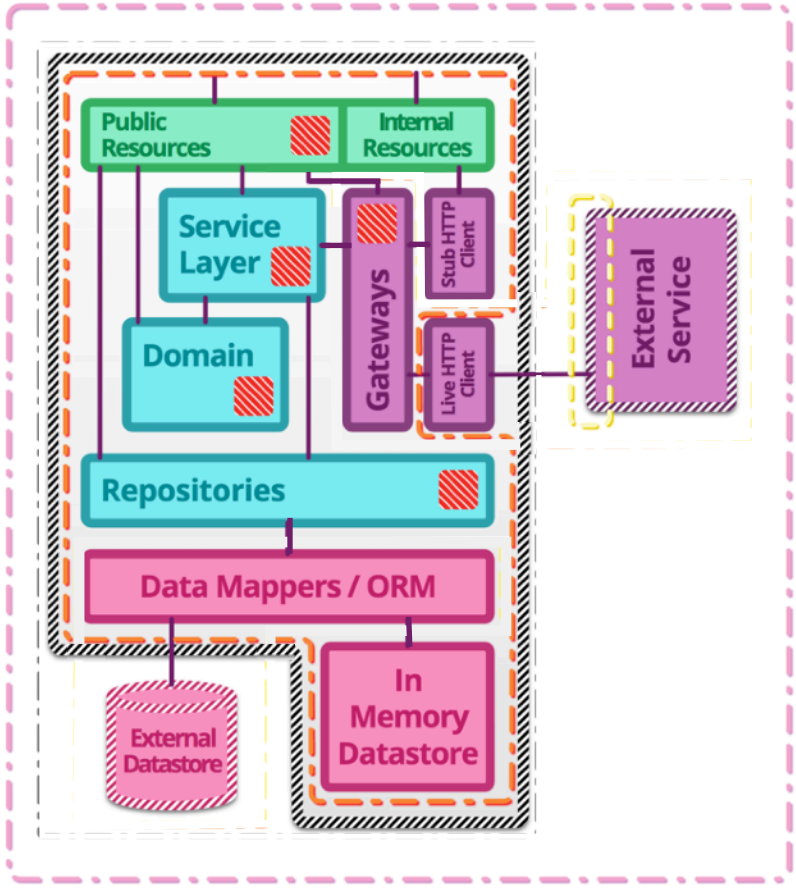


End-to-end tests : verify that a system meets external requirements and achieves its goals, testing the entire system, from end to end.

Contract tests : verify interactions at the boundary of an external service asserting that it meets the contract expected by a consuming service.

Component tests : limit the scope of the exercised software to a portion of the system under test, manipulating the system through internal code interfaces and using test doubles to isolate the code under test from other components.

TESTING STRATEGY



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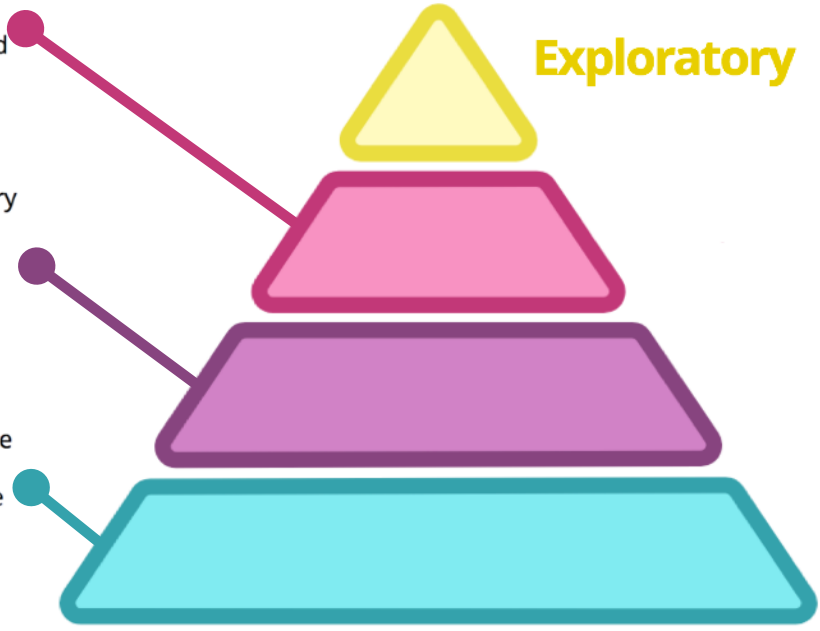


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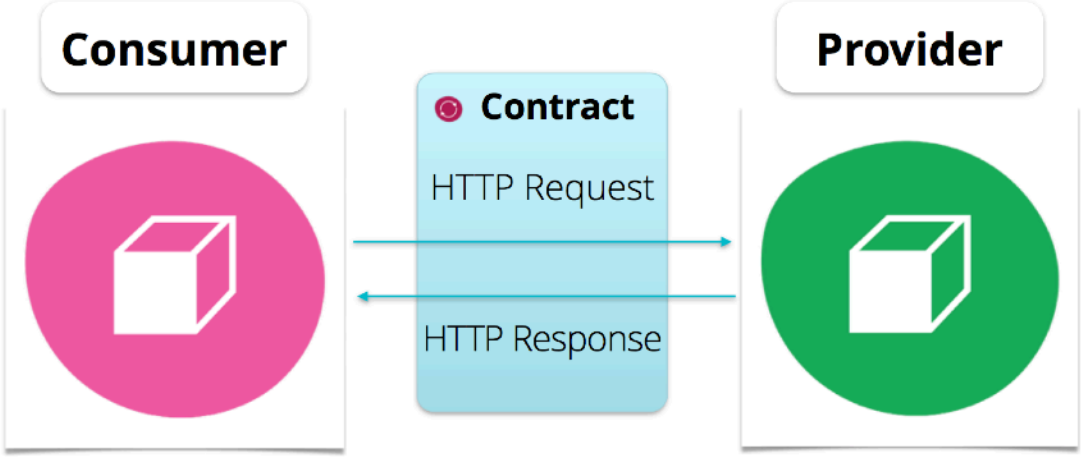
Contract Testing

什么是Contract Testing



Consumer：Service的使用者，向provider发起HTTP请求来获取数据；

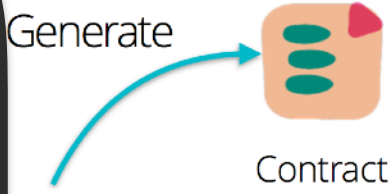
Provider：Service的提供者，接收consumer的HTTP请求并返回数据；

Contract：契约，一种定义在consumer与provider之间的交互方式；

Contract Testing 验证Provider是否按照期望的方式与Consumer进行交互。

```
PactNet.Mocks.MockHttpService.Models;
espace myHR.Tests.Pacts

public class myCoreUserContactsPacts : UserApiPactsBase<ContactsFixture>
{
    [Fact]
    public async Task should_get_user_contacts()
    {
       mockmyCoreApi
         .Given("user has a contact")
         .UponReceiving("a GET request for user contacts")
         .With(
                new ProviderServiceRequest
                {
                    Method = HttpVerb.Get,
                    Path = $"/users/{id}/contacts",
                })
          .WillRespondWith(
                new ProviderServiceResponse
                {
                    Status = 200,
                    Body = new[]
                    {
                        new
                        {
                            name = "Zhang BA",
                        }
                    }
                });
        await myCoreApiClient.GetContacts(id);
        mockmyCoretApi.VerifyInteractions();
    }
}
public class ContactsFixture : ServiceFixture
{
    public ContactsFixture()
    {
        mockService("myHR", "myCoreApi.Contacts", 10853);
    }
}
```



Pact

Provider

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                });
        await myCoreApiClient.GetContacts(id);
        mockmyCoretApi.VerifyInteractions();
    }
}
public class ContactsFixture : ServiceFixture
{
    public ContactsFixture()
    {
        mockService("myHR", "myCoreApi.Contacts", 10853);
    }
}
```

```
{
  "provider": {
    "name": "myCoreApi.Contacts"
  },
  "consumer": {
    "name": "myHR"
  },
  "interactions": [
    {
      "description": "a GET request for user contacts",
      "provider_state": "user has a contact",
      "request": {
        "method": "get",
        "path": "/users/af04e9ec-4511-47c4-9632-99a87b8e39d8/contacts"
      },
      "response": {
        "status": 200,
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            "name": "Zhang ba",
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    }
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  "metadata": {
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  }
}
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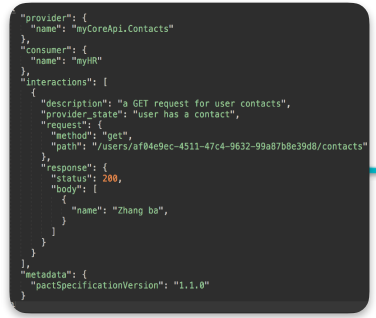


Retrieve

Pact

Verify

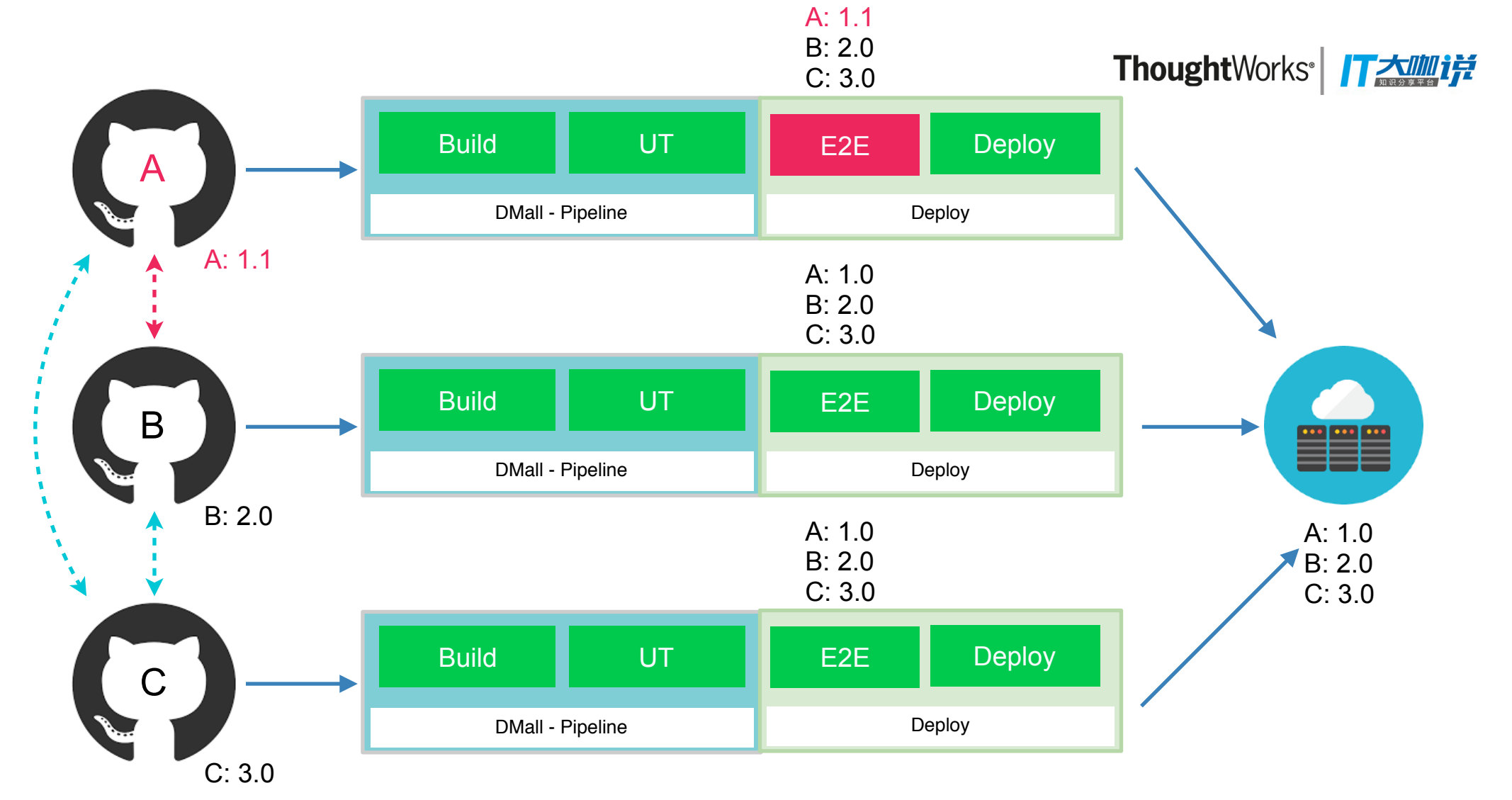
Consumer

```
ng PactNet;
amespace myCore.Contract.Test.By.Consumer.myHR
{
    public class ContactsFacts : ContractFactsBase
    {
        [Fact]
        public void should_verify_contract_with_myHR()
        {
            var pactVerifier = new PactVerifier();

            pactVerifier.ProviderStatesFor("myHR")
                .ProviderState("user has a contact", Setup);

            pactVerifier.ServiceProvider("myCoreApi.Contacts")
                .HonoursPactWith("myHR")
                .PactUri("Pacts/myHR/myHR-myCore-api.contacts.json")
                .Verify();
        }

        void Setup()
        {
            var user = new User(1, "Zhang BA");
            Scope.Resolve<IRepository<User>>().Update(user);
            UseStubAccountService(true);
        }
    }
}
```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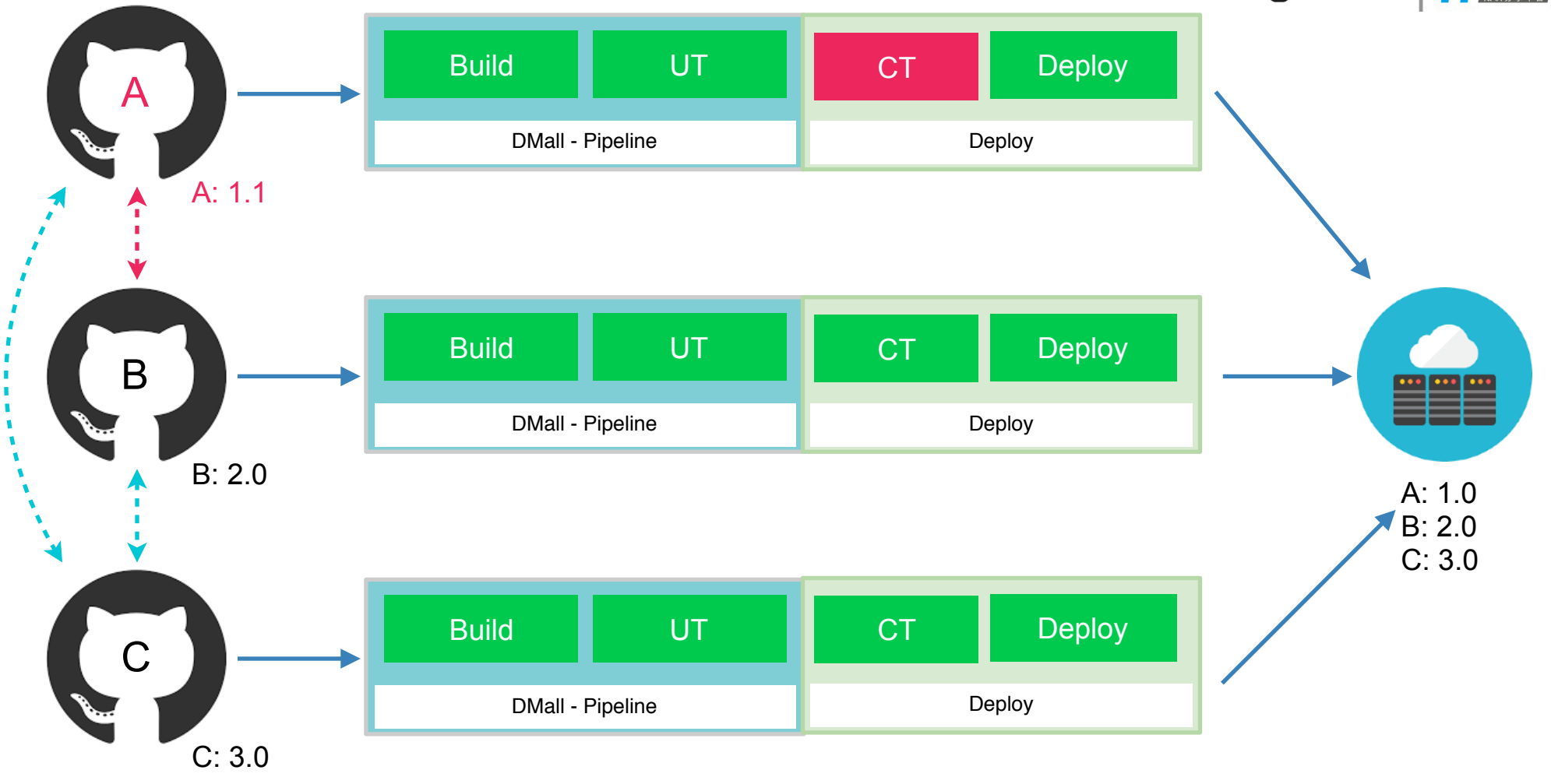
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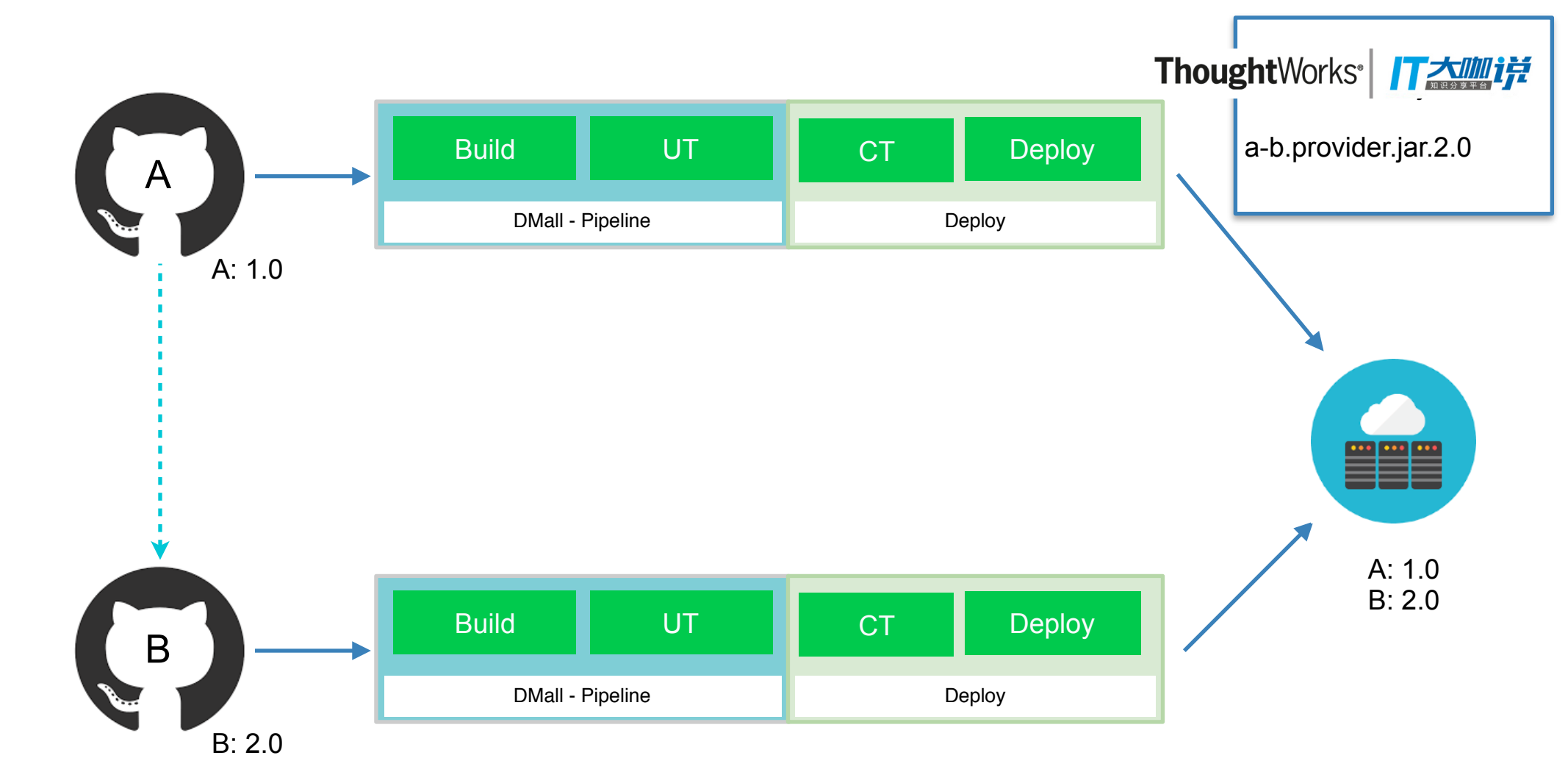
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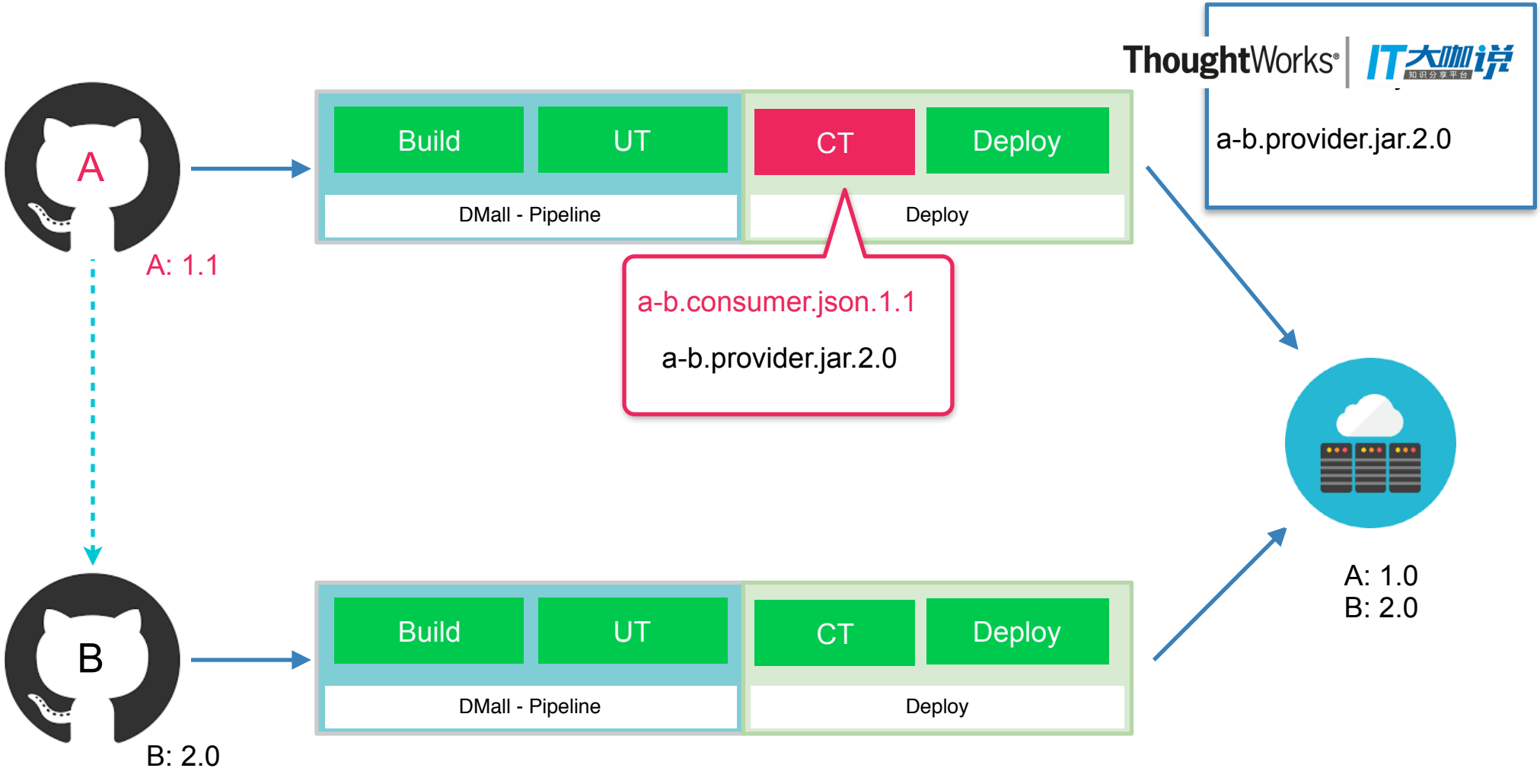
知识分享平台
a-b.provider.jar.2.0
A
A: 1.0
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
B
B: 2.0
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
A: 1.0
B: 2.0


ThoughtWorks
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知识分享平台
a-b.provider.jar.2.0
A
A: 1.1
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
a-b.consumer.json.1.1
a-b.provider.jar.2.0
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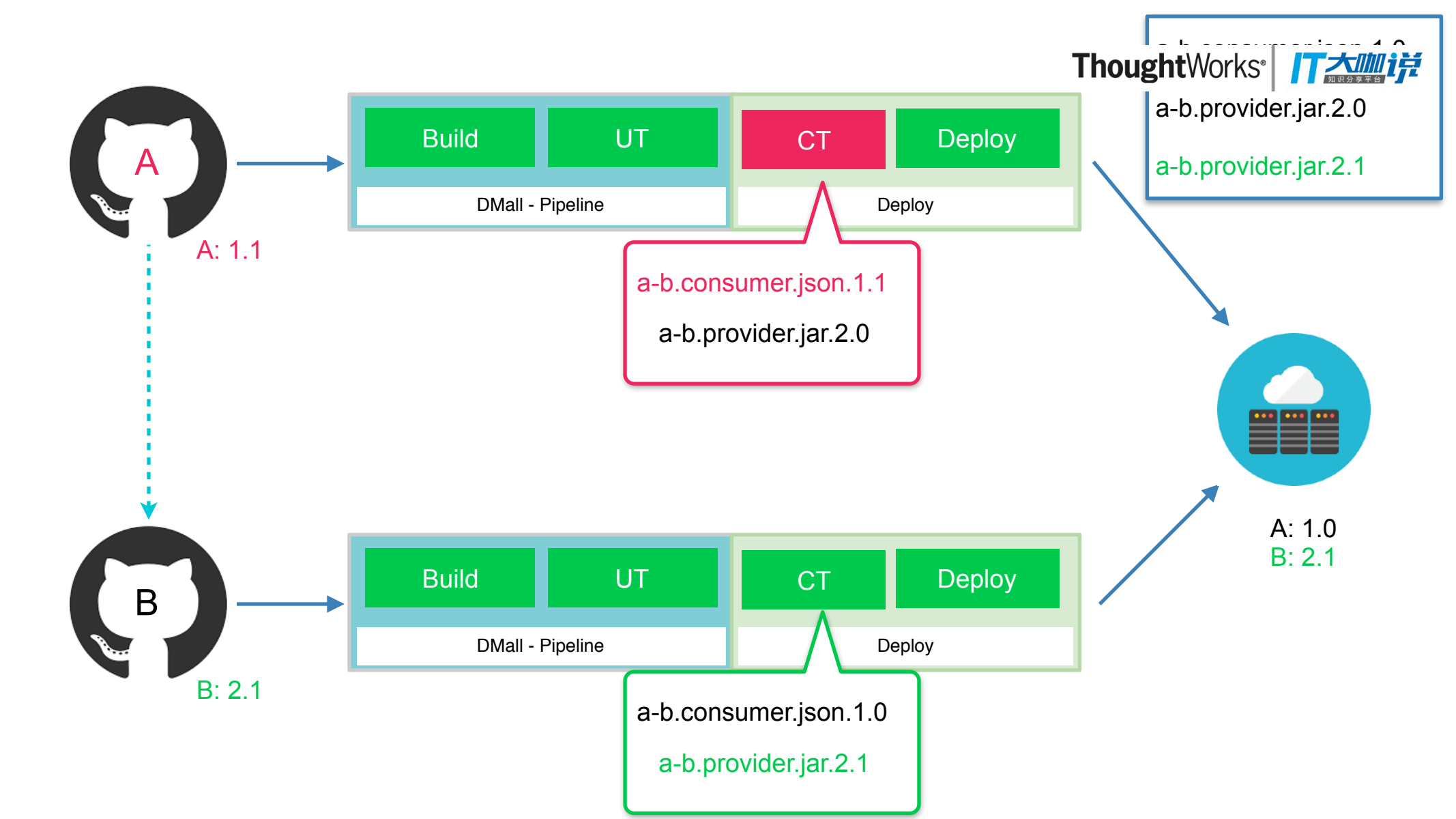
B: 2.0
B
B: 2.0
Build
UT
CT
Deploy
DMall - Pipeline
Deploy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知识分享平台
a-b.provider.jar.2.0
a-b.provider.jar.2.1
A
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Build
UT
CT
Deploy
DMall - Pipeline
Deploy
a-b.consumer.json.1.1
a-b.provider.jar.2.0
A: 1.0
B: 2.1
B
B: 2.1
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
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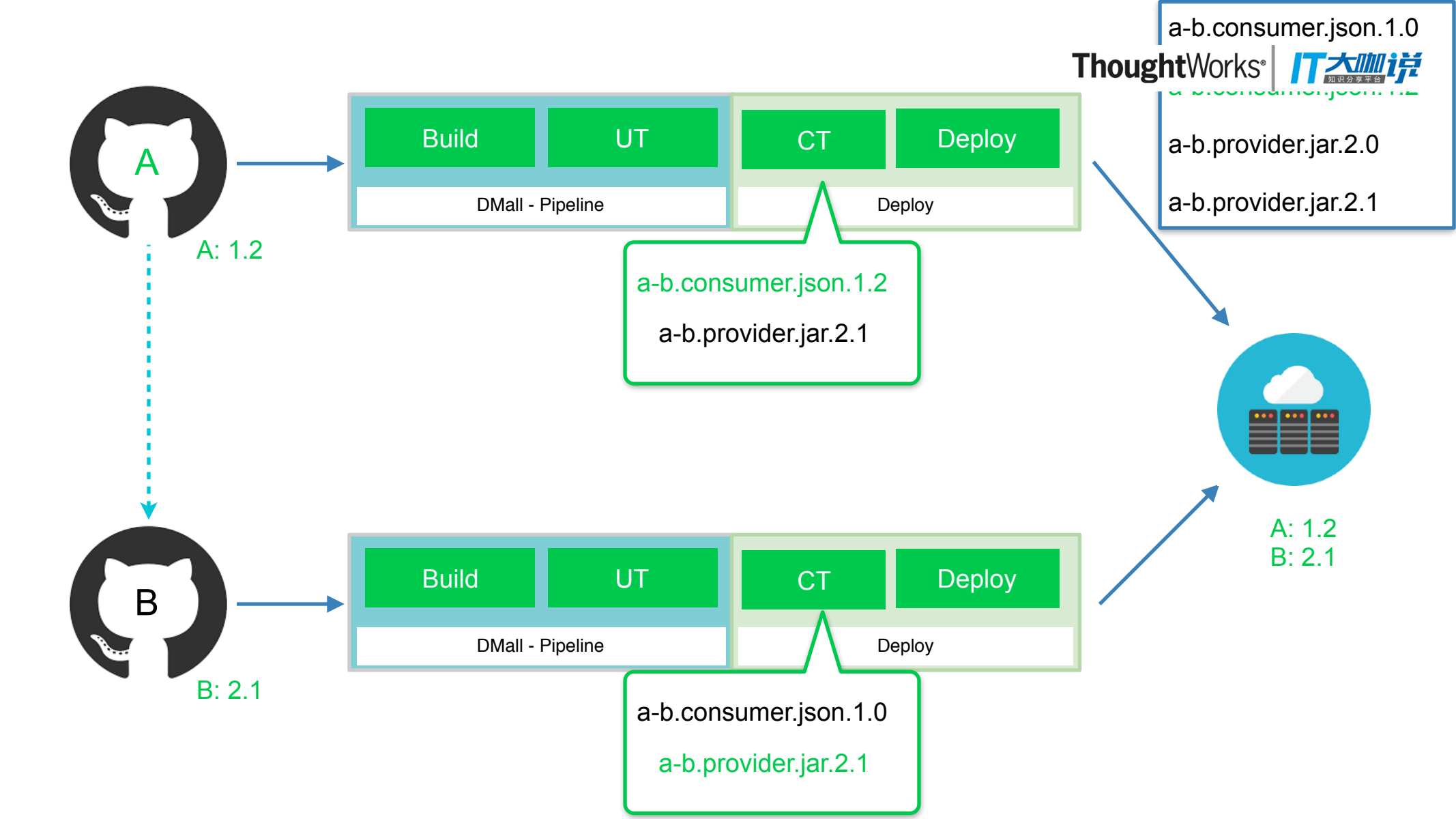
a-b.provider.jar.2.1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知识分享平台
a-b.provider.jar.2.0
a-b.provider.jar.2.1
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A: 1.2
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
a-b.consumer.json.1.2
a-b.provider.jar.2.1
B
B: 2.1
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
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a-b.provider.jar.2.1
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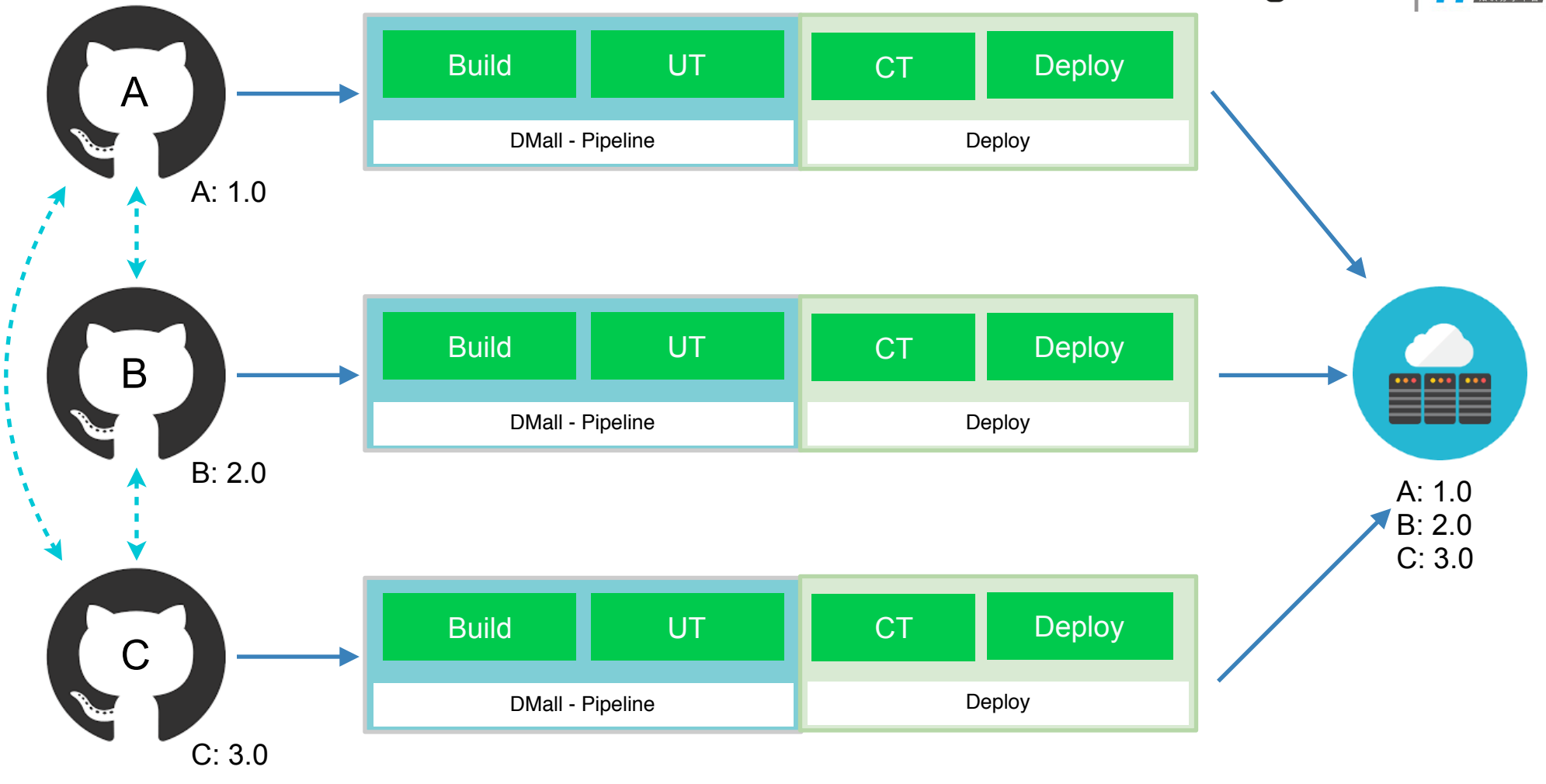
B: 2.1


A
A: 1.0
B
B: 2.0
C
C: 3.0
Build
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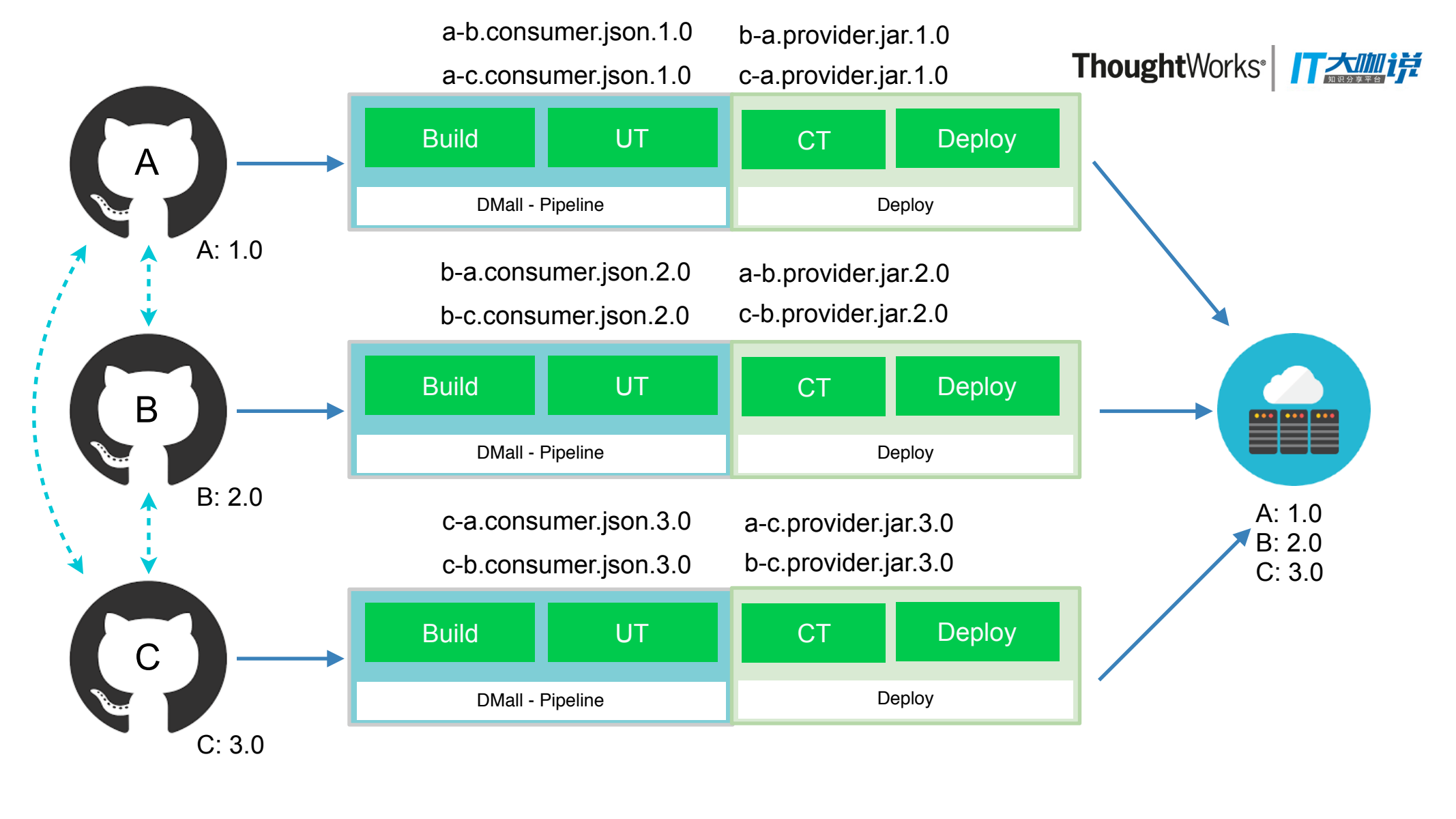
Deploy
DMall - Pipeline
Deploy
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
A: 1.0
B: 2.0
C: 3.0


a-b.consumer.json.1.0
a-c.consumer.json.1.0
b-a.provider.jar.1.0
c-a.provider.jar.1.0
ThoughtWorks
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知识分享平台
A
A: 1.0
Build
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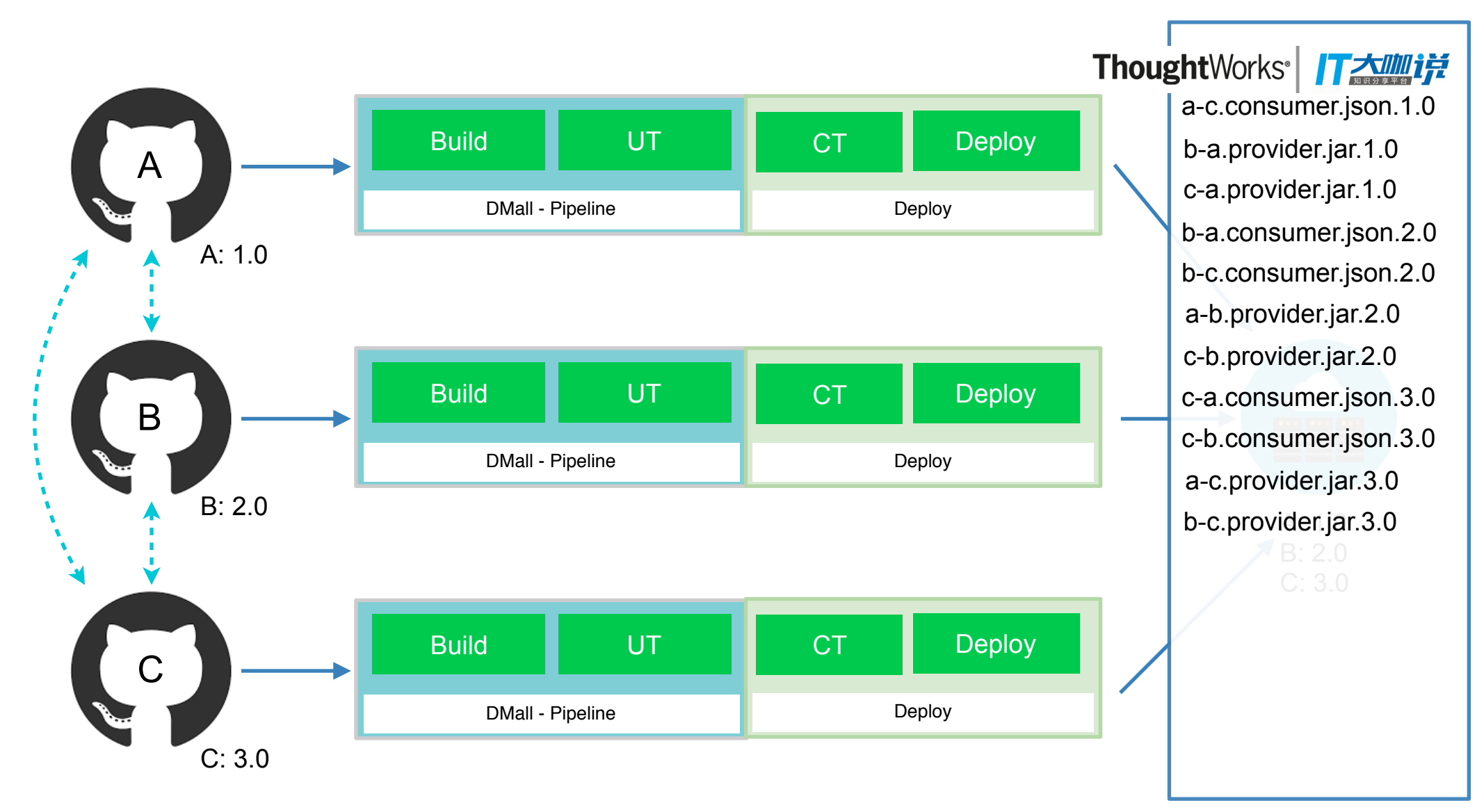
CT
Deploy
DMall - Pipeline
Deploy
b-a.consumer.json.2.0
b-c.consumer.json.2.0
a-b.provider.jar.2.0
c-b.provider.jar.2.0
B
B: 2.0
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
c-a.consumer.json.3.0
c-b.consumer.json.3.0
a-c.provider.jar.3.0
b-c.provider.jar.3.0
C
C: 3.0
Build
UT
CT
Deploy
DMall - Pipeline
Deploy
A: 1.0
B: 2.0
C: 3.0


ThoughtWorks
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知识分享平台
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a-c.consumer.json.1.0
b-a.provider.jar.1.0
c-a.provider.jar.1.0
b-a.consumer.json.2.0
b-c.consumer.json.2.0
a-b.provider.jar.2.0
c-b.provider.jar.2.0
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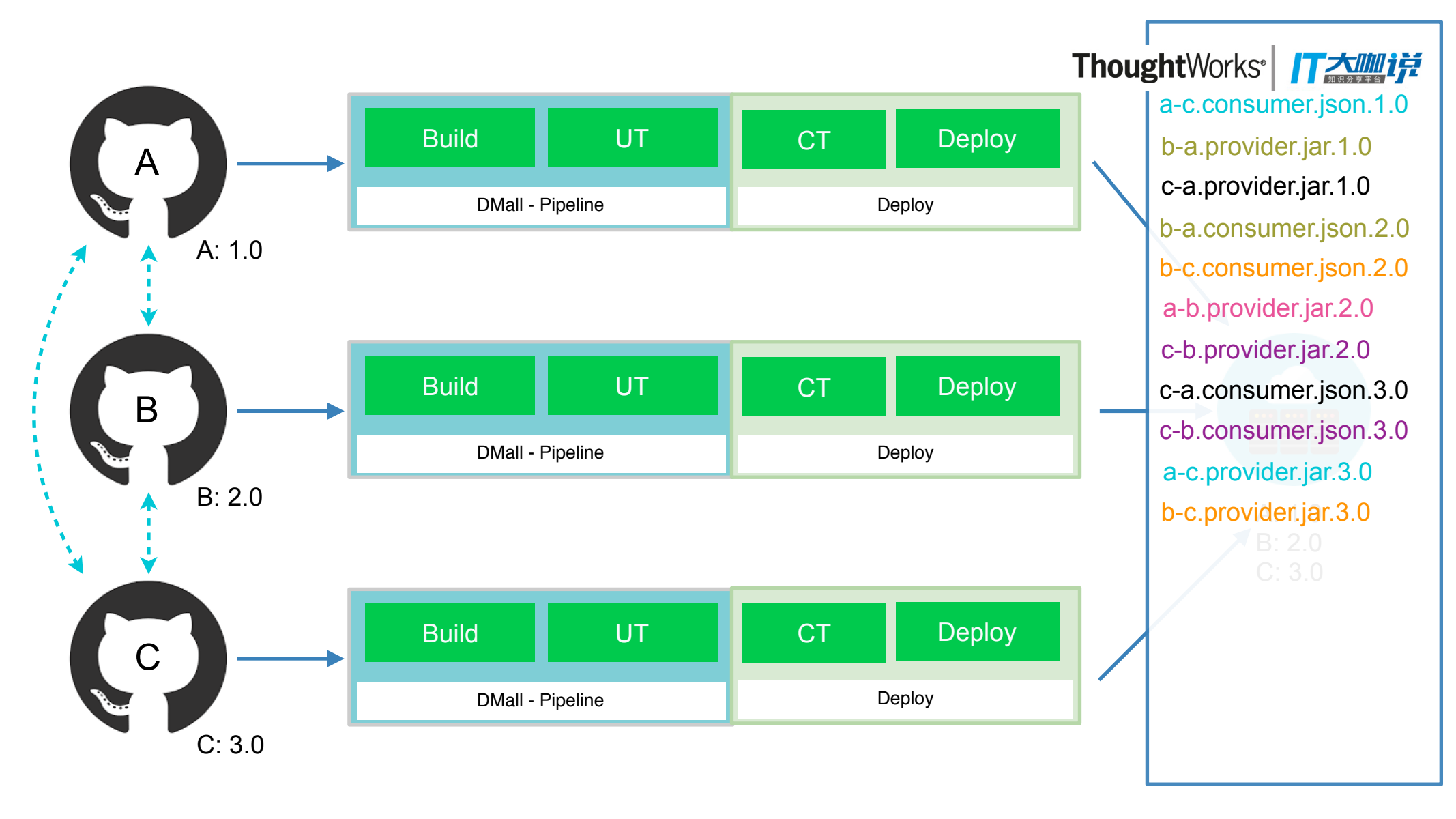
c-b.consumer.json.3.0
a-c.provider.jar.3.0
b-c.provider.jar.3.0


ThoughtWorks
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知识分享平台
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DMall - Pipeline
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a-c.consumer.json.1.0
b-a.provider.jar.1.0
c-a.provider.jar.1.0
b-a.consumer.json.2.0
b-c.consumer.json.2.0
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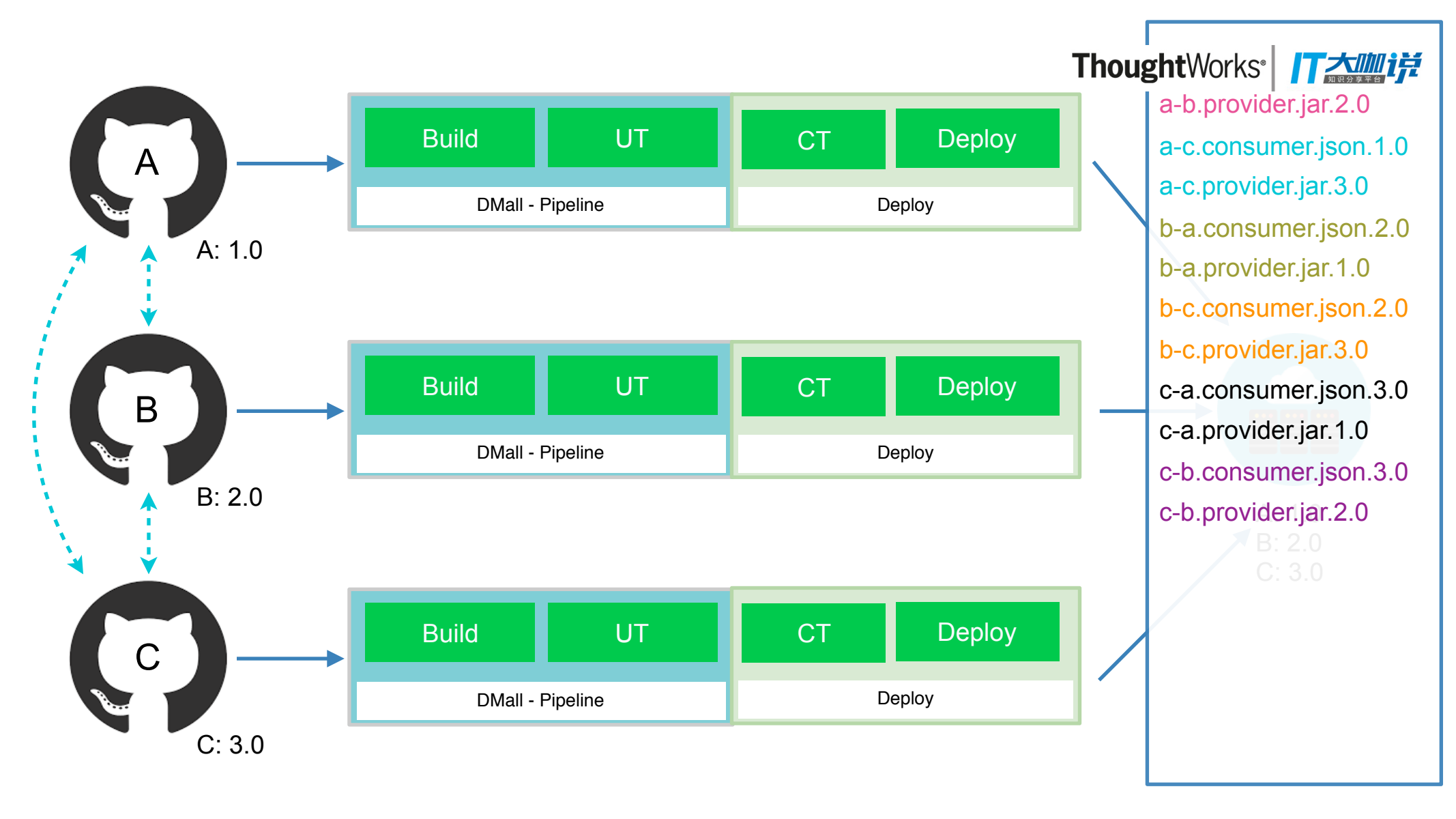
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知识分享平台
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a-b.provider.jar.2.0
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a-c.provider.jar.3.0
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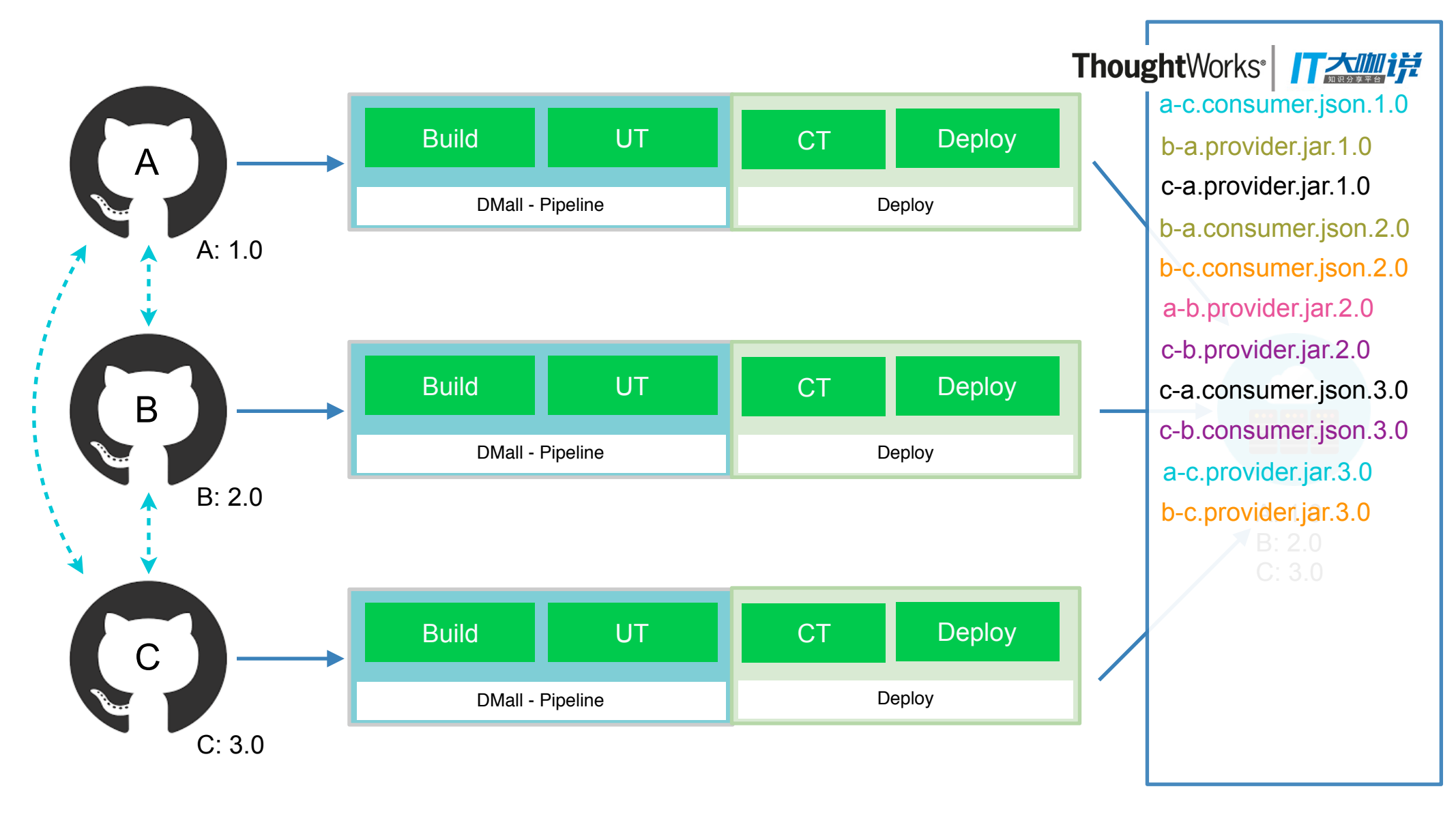
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DMall - Pipeline
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a-c.consumer.json.1.0
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b-c.consumer.json.2.0
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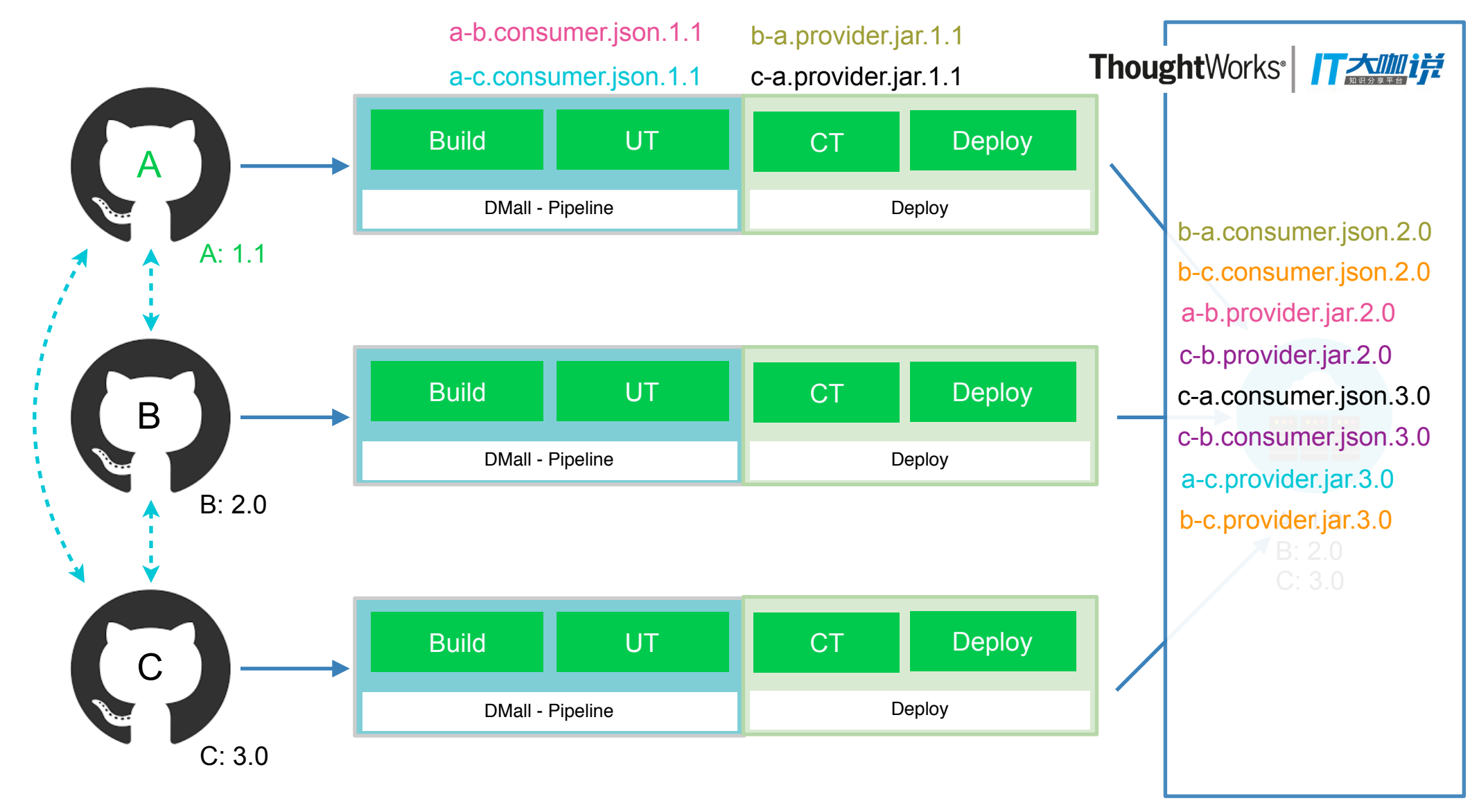
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a-c.consumer.json.1.1
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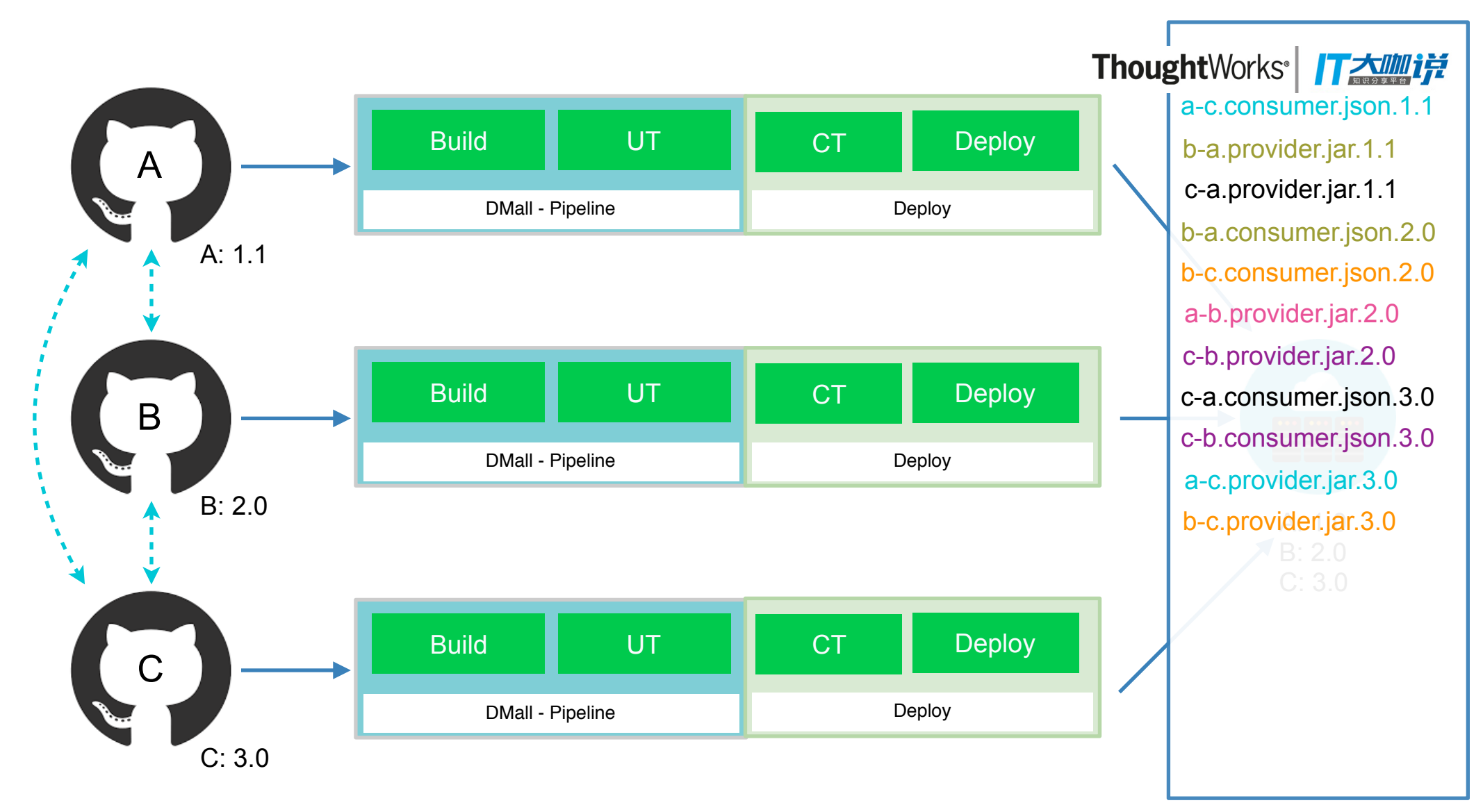
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c-a.consumer.json.3.0
c-b.consumer.json.3.0
a-c.provider.jar.3.0
b-c.provider.jar.3.0

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