



CI/CD на примере TeamCity

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О чем пойдет речь?



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CI/CD



- Continuous Integration (CI) - практика, заключающаяся в постоянном прогоне всего конвейера подготовки ПО для предотвращения возможных интеграционных проблем. Может включать в себя сборку, авто-тесты, деплой на тестовый контур. Наиболее популярная реализации данной практики - сборка и прогон тестов на каждый коммит в репозиторий.
- Continuous Delivery (CD) - подход, при котором команда нацелена на релиз продукта короткими интервалами, обеспечивая готовность выпуска релиза в любое время. Подход нацелен на ускорение цикла поставки продукта в production. Является расширением CI. Нацелен на максимально быстрый выпуск релиза, благодаря чему уменьшается количество изменений между релизами, обеспечивая быстрое решение возникающих проблем.
- Continuous Deployment (CD) - подход, при котором каждое новое изменение в релизной ветке сразу отправляется в production. Ошибки прохождения тестов автоматически блокируют вывод в prod. Понятие релиза как такового исчезает.

CI/CD - существующие решения



- JetBrains TeamCity
- Jenkins
- Gitlab
- Travis CI
- Atlassian Bamboo
- GoCD



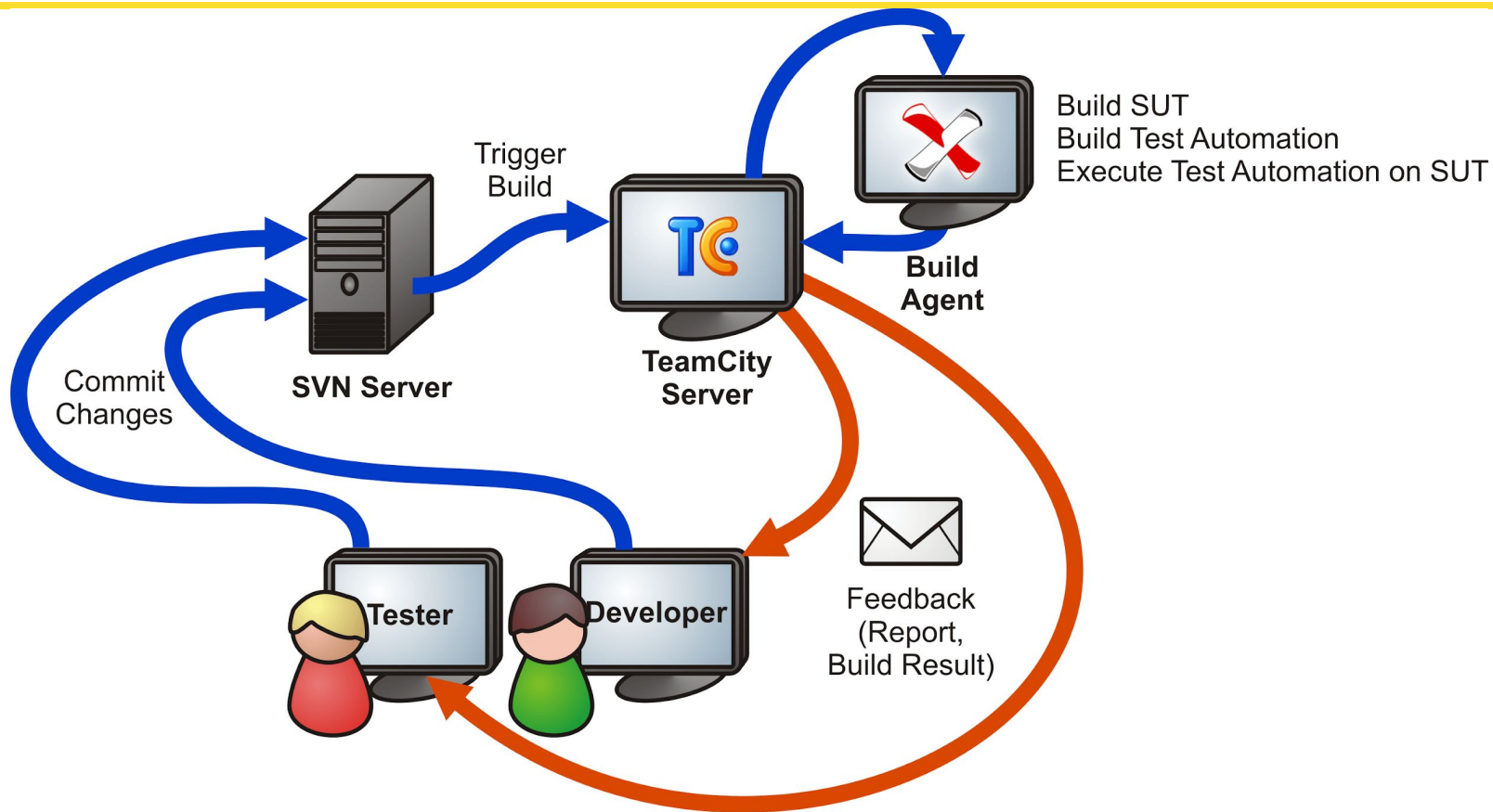
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TeamCity - сущности



- Build-агент - хост, содержащий определенное build-окружение для выполнения заданных инструкций сборки/деплойа/тестирования и т.д.
- Build-конфигурация - описание цикла сборки. Включает в себя условия, зависимости, автоматические триггеры, параметры сборки, а также требования к окружению.
- Build-step - шаг сборки, определенный в build-конфигурации.
- Meta-runner - шаблон build-step, позволяющий объединять часто используемые последовательности шагов. Примеры: Собрать проект Maven, задеплоить код на сервер, отправить email оповещение, отправить API-запрос для перечитывания конфигурации и т.д.
- Артефакт - набор объектов, полученный в результате сборки.
- Проект - совокупность билд-конфигураций.

TeamCity - процесс взаимодействия





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TeamCity - пример билда

Создадим билд-конфигурацию

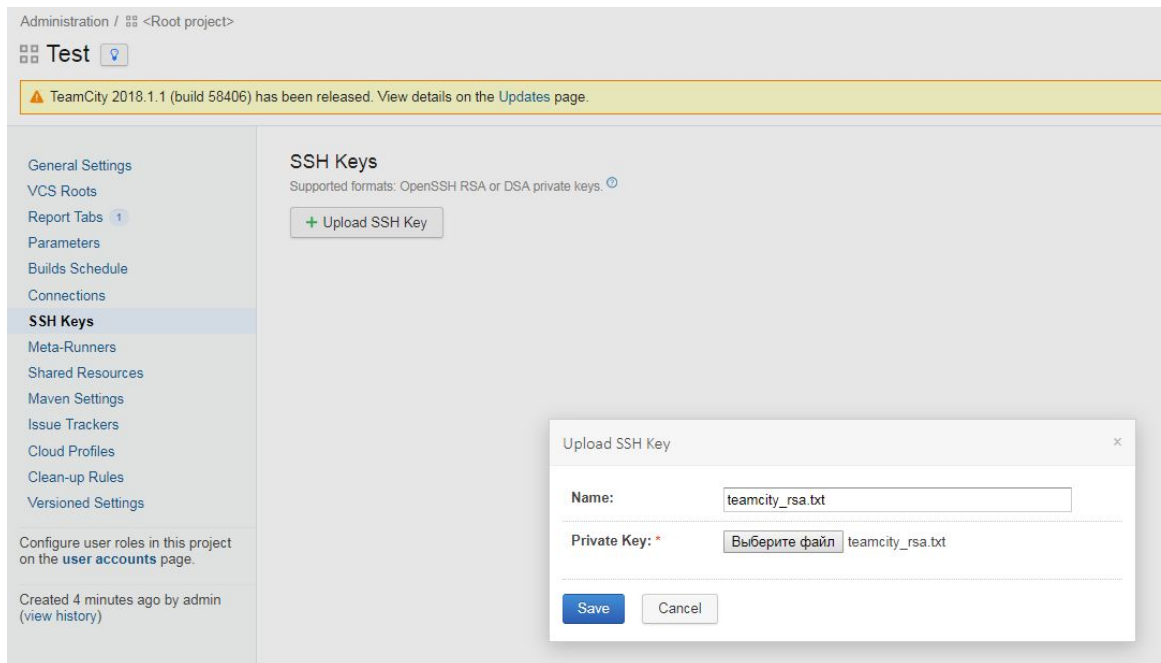


- В окне проекта создадим билд-конфигурацию: Create build configuration
- Manually -> VCS Root Skip

Создадим пару ключей для взаимодействия



- `ssh-keygen -f ~/.ssh/teamcity_rsa`
- Загрузим приватный ключ в наш проект:



Создадим пару ключей для взаимодействия



- Добавим публичную часть ключа на свой хост для взаимодействия:

```
cat ~/.ssh/teamcity_rsa.pub >> ~/.ssh/authorized_keys  
chmod 600 ~/.ssh/authorized_keys
```

Создадим на удаленной машине файл с содержимым



- Добавим build-step “SSH Exec”, который будет выполнять эту задачу

Administration / <Root project> / Test

TestBuild

TeamCity 2018.1.1 (build 58406) has been released. [View details on the Updates page.](#)

General Settings
Version Control Settings
Build Step: SSH Exec
Triggers
Failure Conditions
Build Features
Dependencies
Parameters
Agent Requirements

Last edited 2 minutes ago by admin
(view history)

Build Step

Runner type: SSH Exec
Runner able to execute commands over SSH

Step name: Create file
Optional, specify to distinguish this build step from other steps.

Deployment Target

Target: * master-2.fintech-admin.m1.tinkoff.cloud
Enter hostname or IP address

Deployment Credentials

Authentication method: Uploaded key

Username: * user00
Enter username

Passphrase:

Select key: teamcity_rsa.txt

SSH Commands

Commands: *
Enter remote commands:
echo "Teamcity was here" >> ~/teamcity-file.txt
Enter newline delimited set of commands to run

Show advanced options

Save Cancel

Создадим на удаленной машине файл с содержимым



- Запустим билд, нажав “Run” в правом верхнем углу.

Test / TestBuild Run ... Actions ▾ [Edit Configuration Settings](#) | ▾

#1 (05 Aug 18 20:55)

Overview **Changes** Build Log Parameters Artifacts

Status:	Running	Agent:	tc-agent-1
Progress:	6s passed	Triggered by:	you on 05 Aug 18 20:55
Thread dump:	View thread dump		

```
[user00@master-2 ~]$ cat teamcity-file.txt
Teamcity was here
```



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TeamCity - интеграция с VCS



- Давайте создадим репозиторий в Bitbucket
- Заходим на <http://bitbucket.fintech-admin.m1.tinkoff.cloud>
- Нажимаем Projects в левом верхнем углу и выбираем ваш проект.
- Прежде всего, нужно добавить публичный ключ, ранее созданный.
- Project settings -> Access Keys -> Add key
- Теперь давайте создадим репозиторий.
- Repositories -> Create repository
- Bitbucket предложит вам разные варианты на тот случай если репозиторий уже готов или нет.
- Предположим, что репозиторий ещё не готов. Давайте склонируем пустой репозиторий к себе на хост.

```
[user00@master-2 ~]$ sudo yum install -y git
[user00@master-2 ~]$ git clone
http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/test-repo.git
Cloning into 'test-repo'...
Username for 'http://bitbucket.fintech-admin.m1.tinkoff.cloud': user00
Password for 'http://user00@bitbucket.fintech-admin.m1.tinkoff.cloud':
warning: You appear to have cloned an empty repository.
[user00@master-2 test-repo]$ git config --global user.name "user00"
```


TeamCity - наполним репозиторий



- Теперь давайте добавим какой-то файл, который будет загружаться из репозитория через teamcity на хост.
- Создадим файл в репозитории.

```
[user00@master-2 test-repo]$ git config --global user.name "user00"  
[user00@master-2 test-repo]$ echo "I am repository file." > repo-file.txt  
[user00@master-2 test-repo]$ git add repo-file.txt  
[user00@master-2 test-repo]$ git commit -m "Initial commit"  
[user00@master-2 test-repo]$ git push origin master  
Username for 'http://bitbucket.fintech-admin.ml.tinkoff.cloud': user00  
Password for 'http://user00@bitbucket.fintech-admin.ml.tinkoff.cloud':
```



TeamCity - создадим билд-конфигурацию



- Создадим билд конфигурацию From a repository URL

Create Build Configuration

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

From a repository URL

From GitHub

Set up [connection](#)

From Bitbucket

Set up [connection](#)

Manually

Parent project: *

Test

Repository URL: *

<http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/test-repo.git>

A VCS repository URL. Supported formats: [http\(s\)://](#), [svn://](#), [git://](#), etc. as well as URLs in Maven format. [?](#)

Username:

user00

Provide username if access to repository requires authentication.

Password:

Provide password if access to repository requires authentication.

Proceed

TeamCity - создадим билд-конфигурацию



TestVCS

TeamCity 2018.1.1 (build 58406) has been released. View details on the Updates page.

General Settings

Version Control Settings 1

Build Step: SSH Upload

Triggers

Failure Conditions

Build Features

Dependencies

Parameters

Agent Requirements

Last edited seconds ago by admin
(view history)

Build Step

Runner type:

SSH Upload

Deploys files/directories via SSH

Step name:

upload

Optional, specify to distinguish this build step from other steps.

Execute step:

If all previous steps finished successfully

Specify the step execution policy.

Deployment Target

Target: *

master-2.fintech-admin.m1.tinkoff.cloud

Enter target url in form {hostname}[ip_address][:path/to/target/folder]

Transport protocol:

SCP

Select SSH transfer protocol to use

Port:

Optional. Default value: 22

Deployment Credentials

Authentication method:

Uploaded key

Username: *

user00

Enter username

Passphrase:

Select key:

teamcity_rsa.txt

Deployment Source

Paths to sources: *

Enter paths to sources for deployment:

**/*

Newline- or comma-separated paths to files/directories to be deployed. Ant-style wildcards like dir/**/* and target directories like *.zip where winFiles and linuxFiles are target directories, are supported.

TeamCity - наполним репозиторий



- Теперь проверим.

```
[user00@master-2 ~]$ cat repo-file.txt  
I am repository file.
```



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Teamcity - триггеры



- Позволяют автоматически запускать билд-конфигурацию по событию.
- Имеют опции, позволяющие делать запуск в зависимости от различных факторов: ветка с изменением, комментарий к коммиту, файл который изменился и т.д.



- Возьмем наш существующий билд и добавим в него дополнительную опцию Triggers:

TestVCS

TeamCity 2018.1.1 (build 58406) has been released. View details on the Updates page.

General Settings
Version Control Settings 1
Build Step: SSH Upload
Triggers
Failure Conditions
Build Features
Dependencies
Parameters
Agent Requirements

Last edited one minute ago by admin (view history)

Triggers
Triggers are used to add builds

+ Add new trigger

VCS Trigger

VCS Trigger will add a build to the queue when a VCS check-in is detected.

☐ Trigger a build on changes in snapshot dependencies

Per-checkin Triggering

☐ Trigger a build on each check-in

☐ Include several check-ins in a build if they are from the same committer

Quiet Period Settings

Quiet period mode: ☒ Do not use ☐ Use default value (60 seconds) ☐ Custom seconds

Build Queue Optimization Settings

☒ Queued build can be replaced with an already started build or a more recent queued build

VCS Trigger Rules

Trigger rules:

Edit Trigger Rules:

+:*|

Newline-delimited set of rules: +|--[Ant-like wildcard]

+ Add new rule

Hide advanced options

Save Cancel



- Изменим файл в нашем репозитории:

```
[user00@master-2 test-repo]$ vi repo-file.txt
[user00@master-2 test-repo]$ git add repo-file.txt
[user00@master-2 test-repo]$ git commit -m "Some changes"
[master a93d7e6] Some changes
Committer: user00 <user00@master-2.fintech-admin.m1.tinkoff.cloud>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly:
```

```
git config --global user.name "Your Name"
git config --global user.email you@example.com
```

After doing this, you may fix the identity used **for** this commit with:

```
git commit --amend --reset-author
```

```
1 file changed, 3 insertions(+), 1 deletion(-)
[user00@master-2 test-repo]$ git push origin master
Username for 'http://bitbucket.fintech-admin.m1.tinkoff.cloud' : user00
Password for 'http://user00@bitbucket.fintech-admin.m1.tinkoff.cloud' :
Counting objects: 5, done.
Writing objects: 100% (3/3), 305 bytes | 0 bytes/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/ test-repo.git
0963bad..a93d7e6 master -> master
```

- Будем ожидать запуска билда.



- Билд запустился

	Results	Artifacts	Changes	Started	Duration	Agent	Tags	
#2	✓ Success ▾	None ▾	user00 (1) ▾	08 Aug 18 15:23	4s	tc-agent-1	None	↗

- Файл изменился:

```
[user00@master-2 ~]$ cat repo-file.txt  
I am changed repository file.
```

```
Version 2.0
```

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Teamcity - build chains



- Build chain позволяет вам выстраивать определенную логику деплоя приложения.
- Определенный процесс релиза или теста делится на несколько частей, каждый из которых оформляется в виде отдельного билда.
- В случае фэйла одного из шагов, следующие шаги, зависимые от него, не запустятся.



- Подготовимся. В первую очередь оформим ваше приложение former как репозиторий. Для этого создадим пустой репозиторий former в вашем проекте в bitbucket.

```
[user00@master-2 opt]$ cd /opt/webcode/former/
[user00@master-2 former]$ git init
Initialized empty Git repository in /opt/webcode/former/.git/
[user00@master-2 former]$ git add --all
[user00@master-2 former]$ git commit -m "Initial Commit"
[master (root-commit) 6e8dd35] Initial Commit
Committer: user00 <user00@master-2.fintech-admin.m1.tinkoff.cloud>
3 files changed, 38 insertions(+)
create mode 100644 form/index.html
create mode 100755 process/webrunner.py
create mode 100755 start.bash
[user00@master-2 former]$ git remote add origin
http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/former.git
[user00@master-2 former]$ git push -u origin master
Username for 'http://bitbucket.fintech-admin.m1.tinkoff.cloud': user00
Password for 'http://user00@bitbucket.fintech-admin.m1.tinkoff.cloud':
Counting objects: 7, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (5/5), done.
Writing objects: 100% (7/7), 1001 bytes | 0 bytes/s, done.
Total 7 (delta 0), reused 0 (delta 0)
To http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/former.git
 * [new branch]      master -> master
Branch master set up to track remote branch master from origin.
```



- Остановим приложение: `supervisorctl stop former`
- Удалим его рабочий каталог: `rm -rf /opt/webcode/former`
- Склонируем, например, в нашу домашнюю папку исходный код:
`cd ~ && git clone http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr###former.git`
- Сделаем так, чтобы приложение `former` запускалось из-под нашего пользователя. Добавим в `/etc/supervisord.d/former.ini`:
`user=user00` # или другой, для которого мы ранее генерировали сертификат
- Дадим привилегии на рабочий каталог для этого пользователя:
`chown -R user00:user00 /opt/webcode`
- Сделаем так, что у непривилегированного пользователя были права перезапускать `supervisor` демон. В `/etc/supervisord.conf` ставим:
`[unix_http_server]`
`file=/var/run/supervisor/supervisor.sock ; (the path to the socket file)`
`chmod=0770 ; socket file mode (default 0700)`
`chown=user00:user00 ; socket file uid:gid owner`
- Также делаем `chown user00:user00 /var/run/supervisor`
- Делаем рестарт демона `supervisor`:
`service supervisord restart`

TeamCity - Build chains



- Создадим билд-конфигурацию в ТС. Назовем ее, например, FormerBuild

Create Build Configuration

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

From a repository URL

From GitHub

[Set up connection](#)



From Bitbucket Cloud

[Set up connection](#)

Manually

Parent project: *

Test

Repository URL: *

<http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/former.git>

A VCS repository URL. Supported formats: `http(s)://`, `svn://`, `git://`, etc. as well as URLs in Maven format.

Username:

user00

Provide username if access to repository requires authentication.

Password:

Provide password if access to repository requires authentication.

Proceed



- В этой билд-конфигурации по-хорошему мы должны были бы сбилдить наше приложение. Однако в связи с тем, что оно поставляется статичными файлами, на этом этапе мы его упакуем.
- Заходим в параметры билд-конфигурации, General Settings. В Artifacts paths:

Artifact paths: ⓘ

`**/* => release` Reset

Newline- or comma-separated paths in the form of `[+:]source [-> target]` to include and `-:` to exclude. Ant-style wildcards are supported, e.g. use `**/* => target_directory`, `-: **/folder1 => target_directory`.

Show advanced options

Save Cancel



- Зайдем в меню билд-конфигурации Version Control Settings, выберем наш VCS Root.
- Внизу жмем Show advanced options.
- Выставим Minimum checking interval: 10 сек, чтобы билд быстрее реагировал на изменения в репозитории.

The screenshot shows the 'Version Control Settings' dialog for a VCS Root. The 'Changes Checking Interval' section is expanded, showing the 'Minimum checking interval' set to 'custom: 10 seconds'. Below this, a note states: 'Please note that certain servers can refuse access if polled too frequently. Consider intervals greater than 1800 seconds (30 m)'. The 'VCS Root Project' section shows 'Belongs to project:' with 'Test' and 'Move' buttons. At the bottom, there is a 'Hide advanced options' link and three buttons: 'Save', 'Test connection', and 'Cancel'.

Changes Checking Interval

Minimum checking interval: ☐ use global server setting (60 seconds)

☒ custom: seconds

Please note that certain servers can refuse access if polled too frequently. Consider intervals greater than 1800 seconds (30 m)

VCS Root Project

Belongs to project:

Hide advanced options



- Сконфигурируем trigger по аналогии с предыдущей билд-конфигурацией:

The screenshot displays the TeamCity web interface for configuring a build chain named "FormerBuild". The left sidebar contains a navigation menu with options: General Settings, Version Control Settings, Build Step: Command Line, Triggers (selected), Failure Conditions, Build Features, Dependencies, Parameters, and Agent Requirements. Below the menu, it states "Last edited one minute ago by admin (view history)".

The main content area is titled "Triggers" and includes a sub-header: "Triggers are used to add builds to the queue either when an event occurs (like a VCS check-in) or periodically with some configurable interval." A button "+ Add new trigger" is visible. Below this, a list shows the selected "VCS Trigger".

A modal dialog titled "VCS Trigger" is open, showing the following configuration options:

- VCS Trigger** will add a build to the queue when a VCS check-in is detected.
- ☐ Trigger a build on changes in snapshot dependencies
- Per-checkin Triggering**
 - ☐ Trigger a build on each check-in
 - ☐ Include several check-ins in a build if they are from the same committer
- Quiet Period Settings**
 - Quiet period mode:**
 - ☒ Do not use
 - ☐ Use default value (60 seconds)
 - ☐ Custom seconds
- Build Queue Optimization Settings**
 - ☒ Queued build can be replaced with an already started build or a more recent queued build
- VCS Trigger Rules**
 - Trigger rules:** [Edit Trigger Rules](#)
 -

At the bottom of the dialog, there is a link "Hide advanced options" and two buttons: "Save" and "Cancel".



- Добавьте добавим в этот билд простой шаг, который будет класть файл с номером сборки.

☐ FormerBuild

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

General Settings

Version Control Settings 1

Build Steps

Triggers 1

Failure Conditions

Build Features

Dependencies

Parameters

Agent Requirements

Last edited one minute ago
by admin (view history)

New Build Step

Runner type: Command Line
Simple command execution

Step name:
Optional, specify to distinguish this build step from other steps.

Run: Custom script

Custom script: *

Enter build script content:

```
#!/bin/bash
echo "%build.vcs.number%" > vcs_number
```



- Давайте проверим, что это работает. Запустим сборку, в окне сборки выберем Artifacts:

Test / FormerBuild

✓ #1 (08 Aug 18 17:56) | ▾

Overview Changes Build Log Parameters Artifacts

release

- .git
- form
- process
 - start.bash (248 B)
 - vcs_number (41 B)

Total size: 16.85 KB

There are also hidden artifacts. [Show](#)

TeamCity - Build chains




- Теперь сделаем билд, который будет деплоить этот код.

Create Build Configuration


⚠ TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

From a repository URL

 From GitHub

[Set up connection](#)



 Manually

Parent project:

Test

Name: *

FormerDeploy

Build configuration ID: * ⓘ

Test_FormerDeploy

This ID is used in URLs, REST API, HTTP requests to the server, and configuration settings in the TeamCity

Description:

TeamCity - Build chains



- Добавим FormerBuild в Dependencies. Add new snapshot dependency.

FormerDeploy

TeamCity 2018.1.1 (build 58406) has been released. View details on the Updates page.

General Settings
Version Control Settings
Build Steps
Triggers
Failure Conditions
Build Features
Dependencies
Parameters
Agent Requirements

Created one minute ago by admin
(view history)

Snapshot Dependencies

Build configurations linked by a snapshot dependency will use the same snapshot of the sources. The build of this configuration will run after all the dependencies are successful.

+ Add new snapshot dependency

Artifact Dependencies

Artifact dependency allows using artifacts produced by other build configurations.

+ Add new artifact dependency

Add New Snapshot Dependency

Depend on:

- ☐ Test
- ☒ **FormerBuild**
- ☐ TestBuild
- ☐ TestVCS

1 build configuration selected

Options:

- ☒ Do not run new build if there is a suitable one
- ☒ Only use successful builds from suitable ones
- ☐ Run build on the same agent

On failed dependency: Run build, but add problem

On failed to start/canceled dependency: Make build failed to start

Save Cancel

TeamCity - Build chains



- Добавим FormerBuild в Dependencies. Add new artifact dependency.

FormerDeploy

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

General Settings
Version Control Settings
Build Steps 4
Triggers 1
Failure Conditions
Build Features
Dependencies 2
Parameters
Agent Requirements

Last edited one minute ago by admin (view history)

Snapshot Dependencies

Build configurations linked by a snapshot dependency will use the same snapshot of the sources. The build of this configuration is a part of a [build chain](#).

+ Add new snapshot dependency

Edit Artifact Dependency

Depend on: ☐ Test :: FormerBuild

Get artifacts from: Build from the same chain

Artifacts rules: `+:release=>release`

Provide a newline-delimited set of rules in the form of `[+|-:]SourcePath[|ArchivePath][=>DestinationPath]`

☒ Clean destination paths before downloading artifacts

Save Cancel

TeamCity - Build chains



- Добавим Build Step, который будет деплоить

☐ FormerDeploy

TeamCity 2018.1.1 (build 58406) has been released. View details on the Updates page.

General Settings
Version Control Settings
Build Steps 2
Triggers
Failure Conditions
[Build Features](#)
Dependencies 2
Parameters
Agent Requirements

Last edited seconds ago by admin
(view history)

Build Step (1 of 2): Upload code

Runner type:

SSH Upload

Deploys files/directories via SSH

Step name:

Upload code

Optional, specify to distinguish this build step from other steps.

Execute step:

If all previous steps finished successfully

Specify the step execution policy.

Deployment Target

Target: *

master-2.fintech-admin.m1.tinkoff.cloud:/opt/webcode/form

Enter target uri in form (hostname|ip_address):(path/to/target/folder)

Transport protocol:

SCP

Select SSH transfer protocol to use

Port:

Optional. Default value: 22

Deployment Credentials

Authentication method:

Uploaded key

Username: *

user00

Enter username

Passphrase:

Select key:

teamcity_rsa.txt

Deployment Source

Paths to sources: *

Enter paths to sources for deployment:

release/**

Newline- or comma-separated paths to files/directories to be deployed. Ant-style wildcards like dir/**.zip and target where winFiles and linuxFiles are target directories, are supported.

TeamCity - Build chains



- Добавим Build Step, который будет рестартовать сервис

☐ FormerDeploy

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

[General Settings](#)

[Version Control Settings](#)

Build Step: SSH Upload

[Triggers](#)

[Failure Conditions](#)

[Build Features](#)

[Dependencies](#) 2

[Parameters](#)

[Agent Requirements](#)

Last edited moments ago by admin
([view history](#))

New Build Step

Runner type:

SSH Exec

Runner able to execute commands over SSH

Step name:

Restart supervisor service

Optional, specify to distinguish this build step from other steps.

Deployment Target

Target: *

master-2.fintech-admin.m1.tinkoff.cloud

Enter hostname or IP address

Deployment Credentials

Authentication method:

Uploaded key

Username: *

user00

Enter username

Passphrase:

Select key:

teamcity_rsa.bxt

SSH Commands

Commands: *

Enter remote commands:

```
supervisorctl restart former
```

Enter newline delimited set of commands to run

[Show advanced options](#)



- Добавим также триггер, который будет запускать этот билд, если выполнялся FormerBuild.

☐ FormerDeploy

TeamCity 2018.1.1 (build 58406) has been released. View details on the Updates page.

General Settings
Version Control Settings
Build Steps 2
Triggers
Failure Conditions
Build Features
Dependencies 2
Parameters
Agent Requirements

Last edited 12 minutes ago by admin (view history)

Triggers

Triggers are used to add builds to the queue either when an event occurs (like a VCS check-in) or periodically with some configurable interval.

+ Add new trigger

Finish Build Trigger

Finish Build Trigger

Finished Build Trigger will add a build to the queue after a build finishes in the selected configuration.

Build configuration: ☐ Test :: FormerBuild

☒ Trigger after successful build only

Branch Filter

Branch filter: Edit Branch Filter:

`+:<default>`

Newline-delimited set of rules in the form of +/-logical branch name (with an optional * placeholder)

Save Cancel



- Запустим теперь билд FormerDeploy:

Test / FormerDeploy

✓ #2 (09 Aug 18 14:24) | ▾

Overview Changes Build Log Parameters Dependencies Artifacts

Tree view | Tail



View: All messages ▾ ☐ Console view

```
[14:24:08] + Collecting changes in 1 VCS root
[14:24:08] The build is removed from the queue to be prepared for the start
[14:24:08] Starting the build on the agent tc-agent-1
[14:24:09] Clearing temporary directory: /opt/teamcity-agent/temp/buildTmp
[14:24:09] + Publishing internal artifacts
[14:24:09] Checkout directory: /opt/teamcity-agent/work/88f402795675e731
[14:24:09] + Resolving artifact dependencies
[14:24:09] - Step 1/2: Upload code (SSH Upload)
[14:24:09] [Step 1/2] Starting upload via SCP to [/opt/webcode/former] on host [master-2.fintech-admin.m1.tinkoff.cloud:22]
[14:24:09] [Step 1/2] Uploaded [22] files for [release/**] pattern
[14:24:09] - Step 2/2: Restart supervisor service (SSH Exec) (1s)
[14:24:10] [Step 2/2] Executing commands:
[14:24:10] supervisorctl restart former
[14:24:10] on host [master-2.fintech-admin.m1.tinkoff.cloud]
[14:24:11] [Step 2/2] former: stopped
[14:24:11] [Step 2/2] former: started
[14:24:11] [Step 2/2] SSH exit-code [0]
```



- Проверим работу. Приложения. Ранее мы его удаляли ведь.
<http://master-2.fintech-admin.m1.tinkoff.cloud/form>

Test form

Name:

Age:

TeamCity - Build chains



- Теперь попробуем вызвать всю последовательность путем commit.

- `cd ~/former`

```
vi form/index.html
```

- `<body>`

```
    <h2>Test form. Updated for TeamCity</h2>
```

- `[user00@master-2 former]$ git add form/index.html`

```
[user00@master-2 former]$ git commit -m"Updated form"
```

```
[master 09a1809] Updated form
```

```
Committer: user00 <user00@master-2.fintech-admin.m1.tinkoff.cloud>
```

```
1 file changed, 1 insertion(+), 1 deletion(-)
```

```
[user00@master-2 former]$ git push origin master
```

```
Username for 'http://bitbucket.fintech-admin.m1.tinkoff.cloud:' user00
```

```
Password for 'http://user00@bitbucket.fintech-admin.m1.tinkoff.cloud:'
```

```
Counting objects: 7, done.
```

```
Delta compression using up to 2 threads.
```

```
Compressing objects: 100% (3/3), done.
```

```
Writing objects: 100% (4/4), 411 bytes | 0 bytes/s, done.
```

```
Total 4 (delta 1), reused 0 (delta 0)
```

```
To http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/former.git
```

```
6e8dd35..09a1809 master -> master
```

TeamCity - Build chains



- У нас появилось это изменение в FormerBuild:

Pending changes

1 change | ▾

- После того как билд сбилдился, мы можем посмотреть во вкладке Build chains весь путь:

FormerBuild

Overview History Change Log Issue Log Statistics Compatible Agents 2 Pending Changes Build Chains Settings

Build chains: <All build chains>

Found 3 build chains.

... FormerBuild #2 Success | ▾

☐ Show details ☐ Group composite builds ☐ Group by projects



- Форма также обновилась Test form. Updated for TeamCity

Name:

Age:

Отправить



7

Teamcity - параметры



- Параметры позволяет сделать ваши билды более универсальными.
- К значениям параметров можно обращаться напрямую из билда.



- Зададим параметры для нашего билда

❑ FormerDeploy

⚠ TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

General Settings
Version Control Settings
Build Steps 2
Triggers 1
Failure Conditions
Build Features
Dependencies 2
Parameters
Agent Requirements

Last edited 43 minutes ago
by admin (view history)

+ Add new parameter

Configuration Parameters

Configuration parameters are not passed into build, can be used in references only. ⓘ

None defined

Add New Parameter

Name: *

Kind:

Value: ⓘ
Type '%' for reference completion

Spec:
[Show raw value](#)
Defines parameter control presentation and validation.



- Дополним другими переменными

□ FormerDeploy

⚠ TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

General Settings

Version Control Settings

Build Steps 2

Triggers 1

Failure Conditions

Build Features

Dependencies 2

Parameters 4

Agent Requirements

Last edited moments ago by admin
([view history](#))

Configuration parameter updated.

+ Add new parameter

Configuration Parameters

Configuration parameters are not passed into build, can be used in references only. ⓘ

Name	Value
application_folder	/opt/webcode/former
application_name	former
hostname	master-2.fintech-admin.m1.tinkoff.cloud
username	user00



- Зашаблонизируем build step

☐ FormerDeploy

TeamCity 2018.1.1 (build 58406) has been released. View details on the Updates page.

General Settings
Version Control Settings
Build Steps 2
Triggers 1
Failure Conditions
Build Features
Dependencies 2
Parameters 4
Agent Requirements

Last edited one minute ago by admin (view history)

Build Step (1 of 2): Upload code

Runner type: SSH Upload
Deploys files/directories via SSH

Step name: Upload code
Optional, specify to distinguish this build step from other steps.

Execute step: If all previous steps finished successfully
Specify the step execution policy.

Deployment Target

Target: %hostname%:%application_folder%
Enter target uri in form {hostname}[ip_address][: path/to/target/folder]

Transport protocol: SCP
Select SSH transfer protocol to use

Port:
Optional. Default value: 22

Deployment Credentials

Authentication method: Uploaded key

Username: %username%
Enter username

Passphrase:

Select key: teamcity_rsa.txt

Deployment Source

Paths to sources:
Enter paths to sources for deployment:
release/**

Newline- or comma-separated paths to files/directories to be deployed. Ant-style wildcards where winFiles and linuxFiles are target directories, are supported.



- Зашаблонизируем build step

☐ FormerDeploy

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

General Settings

Version Control Settings

Build Steps 2

Triggers 1

Failure Conditions

Build Features

Dependencies 2

Parameters 4

Agent Requirements

Last edited moments ago by admin
(view history)

Build Step (2 of 2): Restart supervisor service | ▾

Runner type:

SSH Exec ▾
Runner able to execute commands over SSH

Step name:

Restart supervisor service
Optional, specify to distinguish this build step from other steps.

Deployment Target

Target: *

%hostname%
Enter hostname or IP address

Deployment Credentials

Authentication method:

Uploaded key ▾

Username: *

%username%
Enter username

Passphrase:

Select key:

teamcity_rsa.txt ▾

SSH Commands

Commands: *

Enter remote commands:
supervisorctl restart \$application_name\$
Enter newline delimited set of commands to run

Show advanced options



- Проверим, что у нас все работает
- `<body>`
`<h2>Test form. Updated for TeamCity v2</h2>`
- git commit, push
- **Test form. Updated for TeamCity v2**

Name:

Age:

Отправить

8

Teamcity - Templates



- Templates помогают описывать общие сценарии билдов, на основании которых потом можно делать другие билды.
- Уменьшают время конфигурации новых билдов.
- Позволяют делать изменения, которые сразу распространятся на все билды.

TeamCity - Templates



- Сделаем шаблон из существующего билда FormerDeploy
- Уберем из него Dependencies и Finish Build Trigger

Administration / <Root project> / Test

FormerDeploy

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

General Settings

Version Control Settings

Build Steps 2

Triggers 1

Name: *

FormerDeploy

Build configuration ID: * ⓘ

Test_FormerDeploy

Regenerate ID

This ID is used in URLs, REST API, HTTP requests to the server, and configuration settings in the TeamCity Data Directory.

Run ... Actions Build Configuration Home

Pause...

Copy configuration...

Move configuration...

Extract template...

Extract meta-runner...

Delete...

Extract Template

Template name: *

DeployTemplate

Note that this build configuration will be attached to the extracted template.

Template ID: * ⓘ

Test_DeployTemplate

Extract

Cancel

TeamCity - Templates



- Сделаем аналогично шаблон из существующего билда FormerBuild
- Уберем привязанный VCS Root

BuildTemplate

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

Hide

General Settings

Version Control Settings 1

Build Step: Command Line

Triggers 1

Failure Conditions

Build Features

Dependencies

VCS Roots

In this section you can configure how project source code is retrieved from VCS. ⓘ

+ Attach VCS root

Name			Checkout Rules
(git) http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/former.git#refs/heads/master belongs to Test	Edit	Detach	Edit checkout rules (0)



- Создадим ещё один репозиторий на основании Former.
- ```
cd ~
cp -r former former-new/
```
- Поправим ещё немного форму:

```
<body>
 <h2>Test form. This is other host. I like to work on master-1</h2>
```
- ```
git init  
git add --all  
git commit -m "Initial Commit"  
git remote add origin http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/former-new.git  
git push -u origin master
```
- Подготовим supervisord на новом хосте по аналогии с предыдущей машиной.
- Перенесем публичный ключ в authorized_keys.

TeamCity - Templates



- Создадим билд из нашего шаблона

Administration / <Root project> / Test

BuildTemplate

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

General Settings

Version Control Settings

Build Step: Command Line

Create Build Configuration

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

From a repository URL

From GitHub
Set up connection

Manually

Parent project: *

Repository URL: *
A VCS repository URL. Supported formats: http(s)://, svn://, git://, etc. as well as URLs in Maven form

Username:
Provide username if access to repository requires authentication.

Password:
Provide password if access to repository requires authentication.

Actions ▾ Parent Project Home

Create build configuration from this template...

Copy template...

Move template...

Extract meta-runner...

Delete template...

Create Build Configuration From URL

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

VCS repository connection has been verified. Please review build configuration name and click **Proceed** to create new build configuration.

Build configuration name: *

VCS Repository: (Git) <http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/former-new.git>



- Билд создан

FormerNewBuild

TeamCity 2018.1.1 (build 58406) has been released. View details on the [Updates](#) page.

Hide

General Settings

Version Control Settings 1

Build Steps

Triggers 1

Failure Conditions

Build Features

Dependencies

Parameters

Agent Requirements

Created seconds ago by admin
([view history](#))

VCS Roots

In this section you can configure how project source code is retrieved from VCS.

+ Attach VCS root

Name	Checkout Rules		
(git) http://bitbucket.fintech-admin.m1.tinkoff.cloud/scm/usr00/former-new.git#refs/heads/master belongs to Test Commit hook is inactive Latest check for changes: 17:41 (periodical run by the schedule) Changes checking interval: 1m	Edit	Detach	Edit checkout rules (0)

Additional Options

Additional VCS checkout and display settings.

Checkout Settings

TeamCity - Templates



- Создадим аналогично билд из шаблона Deploy. Выберем Manually
- Не забываем поменять хост

Create Build Configuration

TeamCity 2018.1.1 (build 58406) has been released. [View details on the Updates page.](#)

From a repository URL

From GitHub

[Set up connection](#)

Manually

Parent project:

Name: *

Build configuration ID: *

This ID is used in URLs, REST API, HTTP requests to the server, and configuration settings in the TeamCity

Description:

Based on template:

Template parameters

application_folder:

application_name:

hostname:

username:

Create



- Во вновь созданном билде добавим Dependencies и Finish Build Trigger

☐ FormerNewDeploy

TeamCity 2018.1.1 (build 58406) has been released. [View details on the Updates page.](#)

General Settings
Version Control Settings
Build Steps 2
Triggers 1
Failure Conditions
Build Features
Dependencies 1
Parameters 4
Agent Requirements

Last edited moments ago by admin
(view history)

Based on ☒ Test :: DeployTemplate template (detach)

Snapshot dependencies have been updated

Snapshot Dependencies

Build configurations linked by a snapshot dependency will use the same snapshot of the sources. The build of this configuration will run after all the dependencies are built.

This build configuration is a part of a build chain

[+ Add new snapshot dependency](#)

<input type="checkbox"/>	Depends On	Dependency Options
<input type="checkbox"/>	... FormerNewBuild	Do not run new build if there is a suitable one Only use successful builds from suitable ones If dependency is failed: run build, but add problem If dependency is canceled: start/canceled dependency: make build

Add New Artifact Dependency

Depend on: ☐ Test :: FormerNewBuild
Build configuration not specified

Get artifacts from: ☐ Build from the same chain

Artifacts rules:

Provide a newline-delimited set of rules in the form of
[*;-:]SourcePath[ArchivePath][=>DestinationPath]

☐ Clean destination paths before downloading artifacts

[Save](#) [Cancel](#)



- Попробуем закоммитить какой-то код.
- Проверим: <http://master-1.fintech-admin.m1.tinkoff.cloud/form>

Test form. This is other host. I like to work on master-1. And I will.

Name:

Age:

Отправить



- Требуется сделать билд-чейны для приложений former и address book.
 - Нужно сделать два темплейта Build и Deploy из которых будут создаваться последующие реальные билд-конфигурации.
 - Должны получиться две Build конфигурация и две Deploy конфигурации.
 - Чтобы проверить задание - мы будем выполнять коммит в ваш репозиторий и проверять, что изменения отображаются через Web.
 - Чтобы разделить приложения используйте различные location-ы в nginx. Например, location form и location addressbook
-
- Дополнительные задания *
 - Добавить в Build ветку шаг, который будет запускать pylint (линтер для python-скриптов).
 - Реализовать триггер работы Build только в ветках репозитория (Pull-Requests и т.д.), а Deploy должен срабатывать только при мерже в master ветку.



- Официальная документация:
<https://confluence.jetbrains.com/display/TCD10/Getting+Started+with+Team+City>
- Teamcity: <http://teamcity.fintech-admin.m1.tinkoff.cloud>
- Bitbucket: <http://bitbucket.fintech-admin.m1.tinkoff.cloud>



Спасибо за внимание!

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