

Web Push Notifications

Whois

- They are for push



Whois

- They are for push
- Timely



Whois

- They are for push
- Timely
- Relevant and Secure



Whois

- They are for push
- Timely
- Relevant and Secure
- "Cross-platform" and "Cross-browser"



"Cross-platform" and "Cross-browser"

- **Service Workers** background
- **Push API** receive messages from the server
- **Notification API** display messages natively

"Cross-platform" and "Cross-browser"

Desktop

- + Chrome
- + Firefox
- + Opera
- + Safari

Mobile (not iOS yet)

- + Chrome
- + Firefox
- + Opera

Push API

| Edge * | Firefox | Chrome | Safari | Opera | iOS Safari * | Opera Mini * | Android Browser * | Blackberry Browser | Opera Mobile * | Chrome for Android | Firefox for Android |
|--------|---------|--------|---------|-------|--------------|--------------|-------------------|--------------------|----------------|--------------------|---------------------|
| | | 4 | | | | | | | | | |
| 12-13 | 2-21 | 5-21 | 3.1-5.1 | 10-24 | | | 2.1-4.3 | | | | |
| 14-17 | 22-62 | 22-69 | 6-11.1 | 25-55 | 3.2-11.4 | | 4.4-4.4.4 | 7 | 12-12.1 | | |
| 18 | 63 | 70 | 12 | 56 | 12 | all | 67 | 10 | 46 | 3 70 | 63 |
| | 64-65 | 71-73 | TP | | | | | | | | |

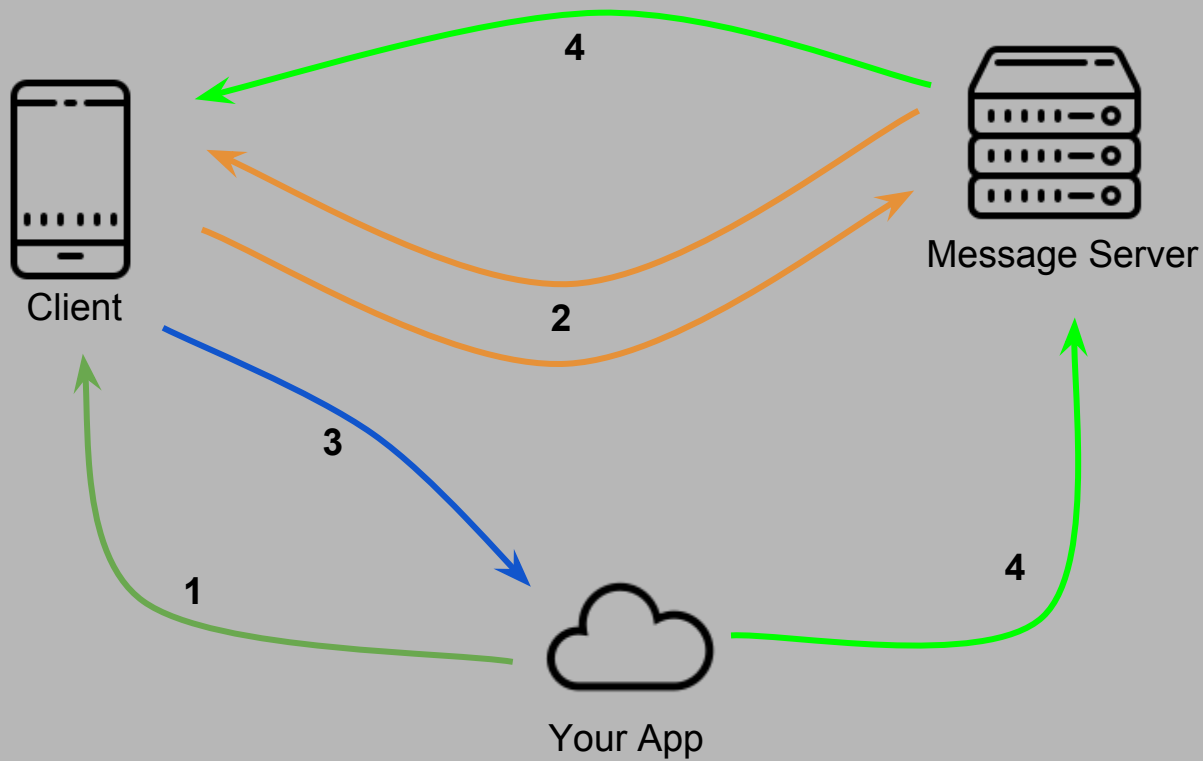
Notification API

| Edge * | Firefox | Chrome | Safari | Opera | iOS Safari * | Opera Mini * | Android Browser * | Blackberry Browser | Opera Mobile * | Chrome for Android | Firefox for Android |
|--------|---------|--------|---------|-------|--------------|--------------|-------------------|--------------------|----------------|--------------------|---------------------|
| | | 4 | | | | | | | | | |
| 12-13 | 2-21 | 5-21 | 3.1-5.1 | 10-24 | | | 2.1-4.3 | | | | |
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Service Workers

| Edge * | Firefox | Chrome | Safari | iOS Safari * |
|--------|---------|--------|--------|--------------|
| | | 49 | | |
| | | 63 | | |
| | | 68 | | 11.2 |
| 17 | 62 | 69 | 11.1 | 11.4 |
| 18 | 63 | 70 | 12 | 12 |

How it works



Message Server

Sends message to your customers

- Accepts requests from your application
- Application key and Client token must have
- Dispatch message to the destination device

Message Server

- FCM: Google, free (former GCM)
Register and create application key in developer console
- APNS: Apple, needs certified developer or 100\$ annually
- MSP: Mozilla Push Service, free. No registration required, open standard

Develop

Authentication, Database, Storage, ...

Quality

Crashlytics, Performance, Test Lab

Analytics



Dashboard, Events, Conversions, Au...

Grow

Predictions, A/B Testing, Cloud Mes...

Project credentials

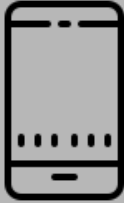
Add server key

| Key | Token |
|---|--|
| Server key | AAAAoNFdIaQ:APA91bFotEb5FSOuAP3_RYKntYX9qzUOTsjQb0FdmOJNw9BrdjHNoFbzcrQiJBSFgw1sYybNRM5A1TS-Gv2A2UleEuT0sDpyCW6h07U_5pJgb86yWyfv2SDBBkkHplucmy_jBdlUNtLU |
| Legacy server key  | AlzaSyAq5tre4kRM30yzylpcLs73N_u8b888xgM |
| Sender ID  | |
| | 690707308964 |

```
importScripts('https://www.gstatic.com/firebasejs/3.7.2/firebase-app.js');
importScripts('https://www.gstatic.com/firebasejs/3.7.2/firebase-messaging.js');

firebase.initializeApp({
  messagingSenderId: '690707308964'
});
```

How it works



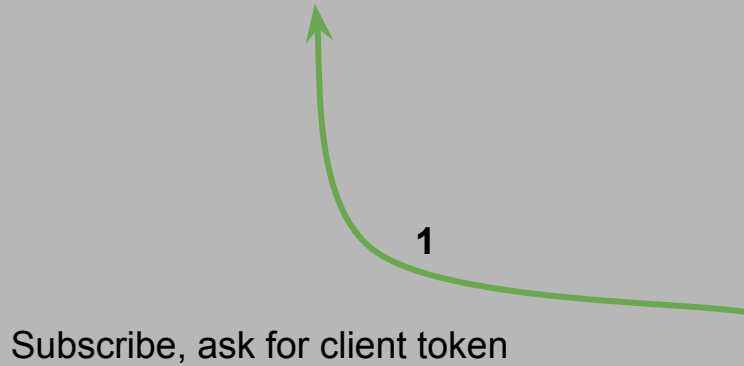
Client



Message Server



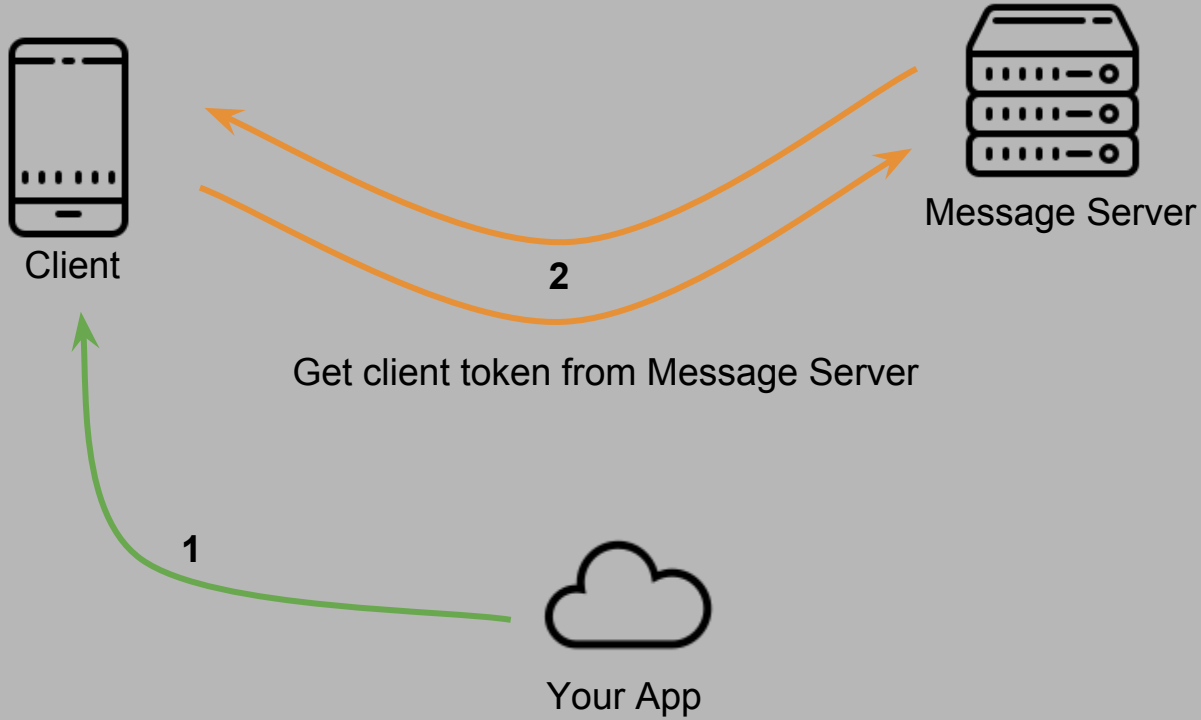
Your App



```
if (
  'Notification' in window &&
  'serviceWorker' in navigator &&
  'localStorage' in window &&
  'fetch' in window &&
  'postMessage' in window
) {
  var messaging = firebase.messaging();

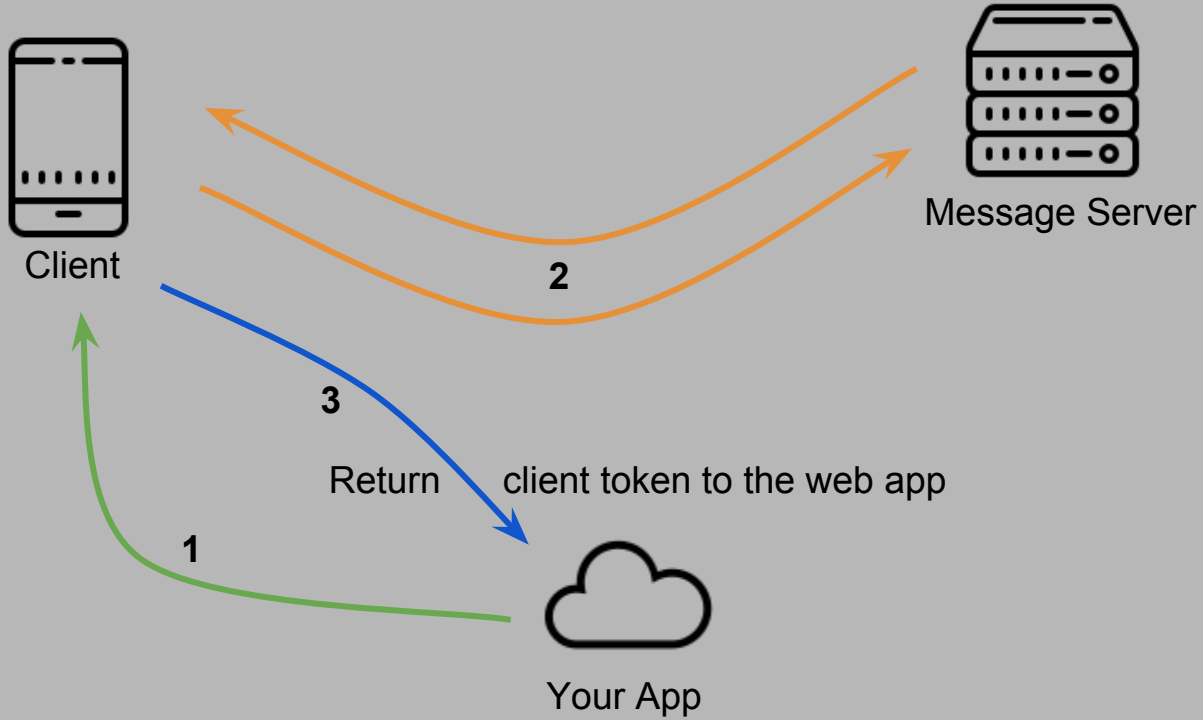
  // already granted
  if (Notification.permission === 'granted') {
    getToken();
  }
}
```

How it works



```
function getToken() {
  messaging.requestPermission()
    .then(function() {
      // Get Instance ID token. Initially this makes a network call, once retrieved
      // subsequent calls to getToken will return from cache.
      messaging.getToken()
        .then(function(currentToken) {
          if (currentToken) {
            sendTokenToServer(currentToken);
          } else {
            setTokenSentToServer(false);
          }
        })
        .catch(function(error) {
          setTokenSentToServer(false);
        });
    })
    .catch(function(error) {
      showError('Unable to get permission to notify', error);
    });
}
```

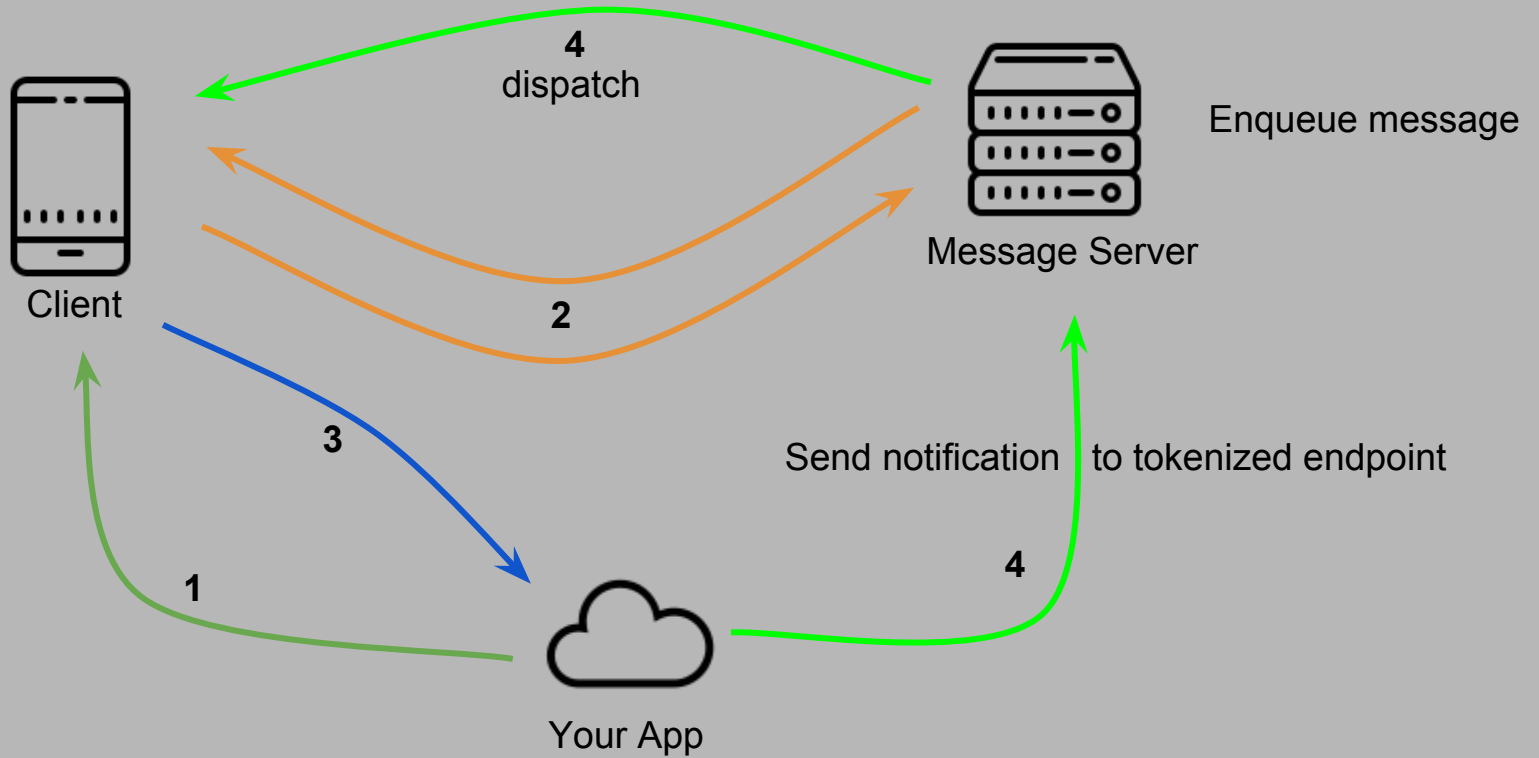

How it works



```
function setTokenSentToServer(currentToken) {
  if (currentToken) {
    var url = 'https://magento.store/pwa/token/save';
    $.post(url, {
      token: currentToken
    });

    window.localStorage.setItem('sentFirebaseMessagingToken', currentToken);
  } else {
    window.localStorage.removeItem('sentFirebaseMessagingToken');
  }
}
```

How it works



```
POST /fcm/send HTTP/1.1
Host: fcm.googleapis.com
Authorization: key=AAAAoNFdIaQ:APA91bFotEb5FS0uAP3_RYKnt....
Content-Type: application/json
```

```
{
  "notification": {
    "title": "Your shoes got discounted!",
    "body": "Make a purchase within 1 hour",
    "icon": "https://killoff.github.io/serviceworker/boots.jpg",
    "click_action": "https://ch-de.voegele-shoes.com/cat-boot-aus-nubukleder-033152235"
  },
  "to": "fyxdvUuYWtk:APA91bFrmxnDd6xDcgxeW4AFhD..."
}
```

<https://firebase.google.com/docs/cloud-messaging/http-server-ref>

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| Legacy server key  | AlzaSyAq5tre4kRM30yzylpcLs73N_u8b888xgM |
| Sender ID  | |
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```
importScripts('https://www.gstatic.com/firebasejs/3.7.2/firebase-app.js');
importScripts('https://www.gstatic.com/firebasejs/3.7.2/firebase-messaging.js');

firebase.initializeApp({
  messagingSenderId: '690707308964'
});
```

```
{
  "notification": {
    "title": "Your shoes got discounted!",
    "body": "Make a purchase within 1 hour",
    "icon": "https://killoff.github.io/serviceworker/boots.jpg",
    "click_action": "https://ch-de.voegele-shoes.com/cat-boot-aus-nubukleder-033152235"
  },
  "registration_ids": [
    "CLIENT-TOKEN-ID-1",
    "CLIENT-TOKEN-ID-2",
    "CLIENT-TOKEN-ID-3"
  ]
}
```

<https://firebase.google.com/docs/cloud-messaging/http-server-ref>

```
function sendNotification(notification) {
  var key = 'AAAAoNFdIaQ:APA91bFotEb5FSOuAP3_RYKntYX9qzU0TsjQb0Fdm0JNw9BrdjHNoFbzcrQiJBSFgw1sYybNRM5

  messaging.getToken()
    .then(function(currentToken) {
      fetch('https://fcm.googleapis.com/fcm/send', {
        method: 'POST',
        headers: {
          'Authorization': 'key=' + key,
          'Content-Type': 'application/json'
        },
        body: JSON.stringify({
          data: notification,
          to: currentToken
        })
      }).then(function(response) {
        return response.json();
      }).then(function(json) {
      }).catch(function(error) {
        showError(error);
      });
    })
    .catch(function(error) {
      showError('Error retrieving Instance ID token', error);
    });
}
```

<https://firebase.google.com/docs/cloud-messaging/http-server-ref>

```
<?php
$url = 'https://fcm.googleapis.com/fcm/send';
$YOUR_API_KEY = 'AAAAoNFdIaQ:APA91bFotEb5FS0uAP3_RYKnt...'; // Server key
$YOUR_TOKEN_ID = 'fyxdvUuYWtk:APA91bFrmxnDd6xDcqxew4AFhD...'; // Client token id

$fields = json_encode([
    'to' => $YOUR_TOKEN_ID,
    'notification' => [
        'title' => 'Your shoes got discounted!',
        'body' => 'Make a purchase within 1 hour',
        'icon' => 'https://killoff.github.io/serviceworker/boots.jpg',
        'click_action' => 'https://ch-de.voegele-shoes.com/cat-boot-aus-nubukleder-033152235',
    ],
]);

$request_headers = [
    'Content-Type: application/json',
    'Authorization: key=' . $YOUR_API_KEY,
];

$ch = curl_init();
curl_setopt($ch, CURLOPT_URL, $url);
curl_setopt($ch, CURLOPT_CUSTOMREQUEST, 'POST');
curl_setopt($ch, CURLOPT_HTTPHEADER, $request_headers);
curl_setopt($ch, CURLOPT_POSTFIELDS, $fields);
curl_setopt($ch, CURLOPT_RETURNTRANSFER, true);
curl_setopt($ch, CURLOPT_FOLLOWLOCATION, true);
$response = curl_exec($ch);
curl_close($ch);
```


messaging.onMessage event

```
// handle catch the notification on current page
messaging.onMessage(function(payload) {
  // register fake ServiceWorker for show notification on mobile devices
  navigator.serviceWorker.register('/serviceworker/firebase-messaging-sw.js');
  Notification.requestPermission(function(permission) {
    if (permission === 'granted') {
      navigator.serviceWorker.ready.then(function(registration) {
        // Copy data object to get parameters in the click handler
        payload.data.data = JSON.parse(JSON.stringify(payload.data));
      }).catch(function(error) {
        // registration failed :(
        showError('ServiceWorker registration failed', error);
      });
    }
  });
});
```

TTL (1 month by default)

```
{
  "notification": {
    "title": "Your shoes got discounted!",
    "body": "Make a purchase within 1 hour",
    "icon": "https://killoff.github.io/serviceworker/boots.jpg",
    "click_action": "https://ch-de.voegele-shoes.com/cat-boot-aus-nubukleder-033152235"
  },
  "to": "fyxdvUuYWtk:APA91bFrmxnDd6xDcqxw4AFhD...",
  "time_to_live": 900
}
```

On time

```
{
  "data": {
    "title": "Your shoes got discounted!",
    "time": 1489006800,
    "icon": "https://killoff.github.io/serviceworker/boots.jpg",
    "click_action": "https://ch-de.voegele-shoes.com/cat-boot-aus-nubukleder-033152235"
  },
  "to": "fyxdvUuYWtk:APA91bFrmxnDd6xDcgxeW4AFhD...",
  "time_to_live": 900
}
```

The Firebase JavaScript SDK way

- Only client token needed, no encrypting payloads
- Custom features
- Supports Android, iOS and web
- Easy to use

The VAPID way

- No sender_id required
- Chrome, Firefox supported (more will join)
- No Account with GCM required
- Tends to replace proprietary API

```
<type name="Magento\Sales\Api\ShipmentManagementInterface">
    <plugin name="wpn_on_delivered" type="Magento\WPN\Model\Plugin\Sales\Shipping"/>
</type>
```

```
public function afterNotify($subject, $id)
{
    // enqueue push notification
}
```

```
public function processQueue($numberPerRun)
{
    // push notifications
}
```

⋮ (

- No guarantee of delivery (even if browser opened and sw works)
- Still no wide support
- Every device needs to be registered
- ...

Why bother?

<https://www.urbanairship.com>

<https://pushpad.xyz>

<https://www1.vizury.com>

<https://moengage.com>

etc.

Q & A

Demo to play

<https://killoff.github.io/serviceworker/>

References

<https://developers.google.com/web/fundamentals/push-notifications/>

<https://developers.google.com/web/updates/2016/07/web-push-interop-wins>

<https://firebase.google.com>

<https://medium.com/@firt/progressive-web-apps-on-ios-are-here-d00430dee3a7>

https://github.com/digitaldrk/push_notifications