

@api.global/typedsocket

Documentation for @api.global/typedsocket

- [readme.md for @api.global/typedsocket](#)
- [changelog.md for @api.global/typedsocket](#)

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A TypeScript library for creating typed WebSocket connections with bi-directional communication support. Extends `@api.global/typedrequest` to bring type-safe request/response patterns to WebSocket connections.

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Features

- **Full Type Safety** - Leverages TypeScript for compile-time checking of all request/response payloads
- **Bi-directional Communication** - Both server and client can initiate requests
- **Auto-reconnect** - Client automatically reconnects on connection loss
- **Connection Tagging** - Tag and filter connections for targeted messaging
- **Browser Compatible** - Works in both Node.js and browser environments
- **SmartServe Integration** - Native support for SmartServe's WebSocket handling

Install

```
npm install @api.global/typedsocket
```

Or with pnpm:

```
pnpm add @api.global/typedsocket
```

Usage

Prerequisites

- TypeScript project setup
- Basic understanding of async/await patterns
- Familiarity with `@api.global/typedrequest` concepts

Define Your Request Interface

First, define the typed request interface that both client and server will use:

```
import * as typedrequestInterfaces from '@api.global/typedrequest-interfaces';

interface IGreetingRequest extends typedrequestInterfaces.implementsTR<
  typedrequestInterfaces.ITypedRequest,
  IGreetingRequest
> {
  method: 'greet';
  request: {
    name: string;
  };
  response: {
    message: string;
  };
}
```

Server Setup

Create a WebSocket server that handles typed requests:

```
import { TypedSocket } from '@api.global/typedsocket';
import * as typedrequest from '@api.global/typedrequest';

// Create the router and add handlers
const typedRouter = new typedrequest.TypedRouter();
```

```

typedRouter.addTypedHandler<IGreetingRequest>(
  new typedrequest.TypedHandler('greet', async (requestData) => {
    return {
      message: `Hello, ${requestData.name}! 🐱`,
    };
  })
);

// Start the TypedSocket server (defaults to port 3000)
const server = await TypedSocket.createServer(typedRouter);

```

Integration with SmartServe

For SmartServe-based applications, use `fromSmartServe()` for native integration:

```

import { TypedSocket } from '@api.global/typedsocket';
import { SmartServe } from '@push.rocks/smartserve';
import * as typedrequest from '@api.global/typedrequest';

const typedRouter = new typedrequest.TypedRouter();

// Add handlers for client-to-server requests
typedRouter.addTypedHandler<IGreetingRequest>(
  new typedrequest.TypedHandler('greet', async (requestData) => {
    return { message: `Hello, ${requestData.name}!` };
  })
);

// Create SmartServe with typedRouter in websocket options
const smartServe = new SmartServe({
  port: 3000,
  websocket: {
    typedRouter,
    onConnectionOpen: (peer) => {
      // Tag connections for later filtering
      peer.tags.add('client');
    }
  }
});

```

```
await smartServe.start();

// Create TypedSocket bound to SmartServe
const typedSocket = TypedSocket.fromSmartServe(smartServe, typedRouter);

// Push notifications to tagged clients
const clients = await typedSocket.findAllTargetConnectionsByTag('client');
for (const client of clients) {
  const request = typedSocket.createTypedRequest<INotifyRequest>('notify', client);
  await request.fire({ message: 'Hello from server!' });
}
```

“ **Note:** When using SmartServe, the WebSocket transport is managed by SmartServe. TypedSocket acts as a convenience layer for finding connections and sending server-initiated requests.

Client Setup

Connect to the WebSocket server from a client:

```
import { TypedSocket } from '@api.global/typedsocket';
import * as typedrequest from '@api.global/typedrequest';

// Create a router for handling server-initiated requests (if needed)
const clientRouter = new typedrequest.TypedRouter();

// Connect to the server
const client = await TypedSocket.createClient(
  clientRouter,
  'http://localhost:3000'
);
```

Using Window Location (Browser)

In browser environments, you can automatically use the current page's origin:

```
const client = await TypedSocket.createClient(
  clientRouter,
```

```
TypedSocket.useWindowLocationOriginUrl()  
);
```

Sending Requests

Client to Server

```
const request = client.createTypedRequest<IGreetingRequest>('greet');  
const response = await request.fire({  
  name: 'World',  
});  
  
console.log(response.message); // "Hello, World! 🌍"
```

Server to Client

The server can also initiate requests to connected clients:

```
// When only one client is connected, it's automatically selected  
const request = server.createTypedRequest<IGreetingRequest>('greet');  
const response = await request.fire({  
  name: 'Client',  
});  
  
// For multiple clients, specify the target connection  
const connection = await server.findTargetConnection(async (conn) => {  
  // Your filter logic here  
  return true;  
});  
const targetedRequest = server.createTypedRequest<IGreetingRequest>('greet', connection);
```

Connection Tagging

Tag connections for organized, targeted communication:

```
// Client side: add a tag  
interface IUserTag extends typedrequestInterfaces.ITag {  
  name: 'userRole';  
}
```

```
    payload: 'admin' | 'user' | 'guest';
  }

client.addTag<IUserTag>('userRole', 'admin');
```

```
// Server side: find connections by tag
const adminConnections = await server.findAllTargetConnectionsByTag<IUserTag>(
  'userRole',
  'admin'
);

// Send to all admins
for (const conn of adminConnections) {
  const request = server.createTypedRequest<INotificationRequest>('notify', conn);
  await request.fire({ message: 'Admin notification' });
}

// Find a single connection
const firstAdmin = await server.findTargetConnectionByTag<IUserTag>('userRole', 'admin');
```

Event Handling

Subscribe to connection status events:

```
client.eventSubject.subscribe((status) => {
  console.log('Connection status:', status);
});

server.eventSubject.subscribe((status) => {
  console.log('Server connection event:', status);
});
```

Cleanup

Properly close connections when done:

```
// Client
await client.stop();
```

```
// Server
await server.stop();
```

API Reference

TypedSocket

Static Methods

Method	Description
<code>createServer(router)</code>	Creates a WebSocket server (defaults to port 3000).
<code>createClient(router, serverUrl, alias?)</code>	Creates a WebSocket client that connects to the specified server URL.
<code>fromSmartServe(smartServe, router)</code>	Creates a TypedSocket bound to an existing SmartServe instance.
<code>useWindowLocationOriginUrl()</code>	Returns the current window location origin (browser only).

Instance Properties

Property	Description
<code>side</code>	Whether this instance is a <code>'server'</code> or <code>'client'</code> .
<code>typedrouter</code>	The TypedRouter instance handling requests.
<code>eventSubject</code>	RxJS Subject for connection status events.

Instance Methods

Method	Description
<code>createTypedRequest(method, targetConnection?)</code>	Creates a typed request for the specified method.
<code>addTag(name, payload)</code>	Adds a tag to the client connection (client-side only).
<code>findAllTargetConnections(filterFn)</code>	Finds all connections matching the filter (server-side only).
<code>findTargetConnection(filterFn)</code>	Finds the first connection matching the filter (server-side only).
<code>findAllTargetConnectionsByTag(key, payload?)</code>	Finds all connections with the specified tag.

Method	Description
<code>findTargetConnectionByTag(key, payload?)</code>	Finds the first connection with the specified tag.
<code>stop()</code>	Closes the WebSocket connection.

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changelog.md for @api.global/typedsocket

2026-02-26 - 4.1.2 - fix(ci)

update npmextra.json to rename keys, add release registries and add CI entry; remove legacy npmci configuration

- Renamed top-level key "gitzone" to "@git.zone/cli" and "tsdoc" to "@git.zone/tsdoc" to use scoped configuration keys.
- Added release configuration under @git.zone/cli with registries [<https://verdaccio.lossless.digital>, <https://registry.npmjs.org>] and accessLevel set to public.
- Removed legacy "npmci" block and introduced an "@ship.zone/szci" section (npmGlobalTools: []).
- No source code changes; this is a configuration/CI/publishing metadata update. Current package.json version is 4.1.1, recommend a patch bump.

2026-02-26 - 4.1.1 - fix(typedsocket)

reject pending requests on disconnect to avoid hanging promises

- Rejects all pending requests with Error('TypedSocket disconnected') when connection is lost
- Clears pendingRequests map to prevent memory leaks
- Preserves existing auto-reconnect scheduling behavior

2025-12-04 - 4.1.0 - feat(typedsocket)

Add SmartServe integration, tagging and improved client reconnect/backoff; update deps and tests

- Add SmartServe integration: new `TypedSocket.fromSmartServe(smartServe, typedRouter)` with SmartServe connection wrappers and tag compatibility
- Implement server-side tag handlers and storage (`__typedsocket_setTag / __typedsocket_removeTag`) with payloads stored under internal `TAG_PREFIX`
- Add client improvements: `TypedSocket.createClient(...)` with `autoReconnect`, configurable exponential backoff (`initialBackoffMs`, `maxBackoffMs`, `maxRetries`) and connection status observable (`statusSubject`)
- Expose client tag API: `setTag(name, payload)` and `removeTag(name)` to manage server-side tags
- Server-side APIs for connection discovery: `findAllTargetConnections`, `findTargetConnection`, `findAllTargetConnectionsByTag`, `findTargetConnectionByTag`
- Plugins and internal tooling updated: replace `smartsocket` exports with `smartdelay` and `smartpromise`; export `smartpromise` and `smartdelay` for internal use
- Tests updated to use SmartServe for end-to-end scenarios (server/client message flow, tagging and connection discovery); test script changed to run in verbose mode
- Bumped dependency versions and adjusted peer dependency for `@push.rocks/smartsolve` to `>=1.1.0`

2025-12-03 - 4.0.0 - BREAKING CHANGE(`TypedSocket.createServer`)

Remove SmartExpress attachment support from `createServer` and upgrade `smartsocket` to `^3.0.0`

- Bump dependency `@push.rocks/smartsocket` from `^2.1.0` to `^3.0.0`.
- Remove optional SmartExpress attachment parameter from `TypedSocket.createServer` and remove the `setExternalServer` call — `createServer` now only accepts a `TypedRouter` and starts its own `Smartsocket` server.
- Update README: remove the SmartExpress integration section and adjust the API docs to reflect the new `createServer(router)` signature.
- Adjust TypeScript implementation to match the simplified `createServer` signature and behavior.

2025-12-02 - 3.1.1 - fix(package)

Include `pnpm packageManager` metadata in `package.json`

- Added packageManager field to package.json:
pnpm@10.18.1+sha512.77a884a165cbba2d8d1c19e3b4880eee6d2fcabd0d879121e282196b80042351d5eb3ca0935fa599da1dc51265cc68816ad2bddd2a2de5ea9fdf92adbec7cd34
- No runtime or API changes — metadata-only change

2025-12-02 - 3.1.0 - feat(TypedSocket)

Add SmartServe integration to TypedSocket, support SmartServe connections and tagging; update dependencies and docs; remove GitLab CI config

- Add TypedSocket.fromSmartServe(smartServe, typedRouter) to bind TypedSocket to an existing SmartServe instance for native WebSocket handling.
- Introduce ISmartServeConnectionWrapper and wrapSmartServePeer to provide tag compatibility between SmartServe (Set) and TypedSocket (id/payload). Tag payloads are stored in peer.data with '**typedsocket_tag**' prefix.
- Server-initiated requests in SmartServe mode use TypedRouter.fireEventInterestMap to correlate requests and responses asynchronously.
- Extend createTypedRequest, findAllTargetConnections, findTargetConnection, findAllTargetConnectionsByTag and findTargetConnectionByTag to support both Smartsocket and SmartServe backends (via wrappers).
- eventSubject: Emit a warning and return a new Subject in SmartServe mode (SmartServe lifecycle/events should be consumed via SmartServe hooks).
- stop(): In SmartServe mode TypedSocket clears internal wrappers but does not stop SmartServe (SmartServe lifecycle is managed externally).
- Add optional peer dependency @push.rocks/smartserv and expose type-only imports in ts/typedsocket.plugins.ts.
- Bump several devDependencies and runtime dependencies to newer versions (tsbuild, tsbundle, tsrun, tstest, smartenv, smartserve, smartjson, smartrx, smartsocket, smartstring, smarturl).
- Update README and readme.hints with SmartServe integration docs and examples.
- Remove .gitlab-ci.yml (CI configuration removed).

2024-04-18 - 3.0.1 - patch

Small patch release.

- Version bump to 3.0.1.

- No additional details provided in commits.

2024-04-18 - 3.0.0 - core

Major 3.0.0 release with core updates and documentation improvements.

- Core fixes and updates applied.
- Documentation updated (commit dated 2024-04-14).
- General maintenance and polishing for the 3.x line.

2023-08-06 - 2.0.28 - core (BREAKING CHANGE)

Breaking change in core introduced in 2.0.28; important compatibility considerations.

- BREAKING CHANGE(core): update — review integration points before upgrading.
- This capstone release follows a series of patch releases addressing stability and core behavior.

2022-03-24 - 2.0.0 - core

Introduction of the 2.x stable line and subsequent patch series.

- 2.0.0 initial release of the 2.x series.
- Follow-up patch releases (2.0.1 through 2.0.27) contain numerous "fix(core): update" changes — ongoing bug fixes, stability improvements, and small core adjustments across 2022-2023.
- Users upgrading from 1.x should review 2.x changes and the 2.0.28 breaking change above.

2020-12-26 - 1.0.2 - core

Initial implemented functionality and the start of 1.x maintenance.

- fix(core): implement basic functionality — initial usable feature set implemented in 1.0.2.

- Subsequent 1.0.3 through 1.0.27 releases (2020–2022) included ongoing fixes and minor updates to stabilize the 1.x line.