@api.global/typedserver

Documentation for @api.global/typedserver

- readme.md for @api.global/typedserver
- changelog.md for @api.global/typedserver

readme.md for @api.global/typedserver

A powerful TypeScript-first web server framework for building modern full-stack applications. Features static file serving, live reload, type-safe API integration, decorator-based routing, service worker support, and edge computing capabilities. Part of the `@api.global` ecosystem.

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□ Features

- □□ **Type-Safe API** — Full TypeScript support with `@api.global/typedrequest` and `@api.global/typedsocket`
- □□ **Decorator Routing** — Clean, expressive routing with `@Route`, `@Get`, `@Post` decorators via smartserve
- □□ **Security Headers** — Built-in CSP, HSTS, X-Frame-Options, and comprehensive security configuration
- ⚡ **Live Reload** — Automatic browser refresh on file changes during development
- □□ **Service Worker** — Advanced caching, offline support, and background sync
- ☁ **Edge Workers** — Cloudflare Workers compatible edge computing with domain routing
- □□ **WebSocket** — Real-time bidirectional communication via TypedSocket
- □□ **SEO Tools** — Built-in sitemap, RSS feed, and robots.txt generation
- □□ **SPA Support** — Single-page application fallback routing
- □□ **PWA Ready** — Web App Manifest generation for progressive web apps
- □□ **Compression** — Automatic Brotli + Gzip response compression
- □□ **Bundled Content** — Serve pre-bundled content from memory for zero-filesystem deployments

□□ Installation

```
# Using pnpm (recommended)
pnpm add @api.global/typedserver

# Using npm
npm install @api.global/typedserver
```

□□ Quick Start

Basic Server

```
import { TypedServer } from '@api.global/typedserver';

const server = new TypedServer({
  serveDir: './public',
  cors: true,
  watch: true,           // Enable file watching
  injectReload: true,    // Inject live reload script
});

await server.start();
console.log('Server running on port 3000!');
```

Full Configuration

```
import { TypedServer } from '@api.global/typedserver';

const server = new TypedServer({
  port: 8080,
  serveDir: './dist',
  cors: true,

  // Development
```

```
  watch: true,
  injectReload: true,
  noCache: true,            // Disable browser caching

  // Production
  forceSsl: true,
  spaFallback: true,        // Serve index.html for client-side routes

  // SEO
  sitemap: true,
  feed: true,
  robots: true,
  domain: 'example.com',
  blockWaybackMachine: false,

  // PWA
  appVersion: 'v1.0.0',
  manifest: {
    name: 'My App',
    short_name: 'myapp',
    start_url: '/',
    display: 'standalone',
    background_color: '#ffffff',
    theme_color: '#000000',
  },

  // Compression
  compression: {
    enabled: true,
    algorithms: ['br', 'gzip'],
    threshold: 1024,
  },
});

await server.start();
```

□□ Routing

TypedServer uses a unified routing system powered by `@push.rocks/smartserve`. You can add routes using decorators or the programmatic API.

Decorator-Based Routing

Create clean, expressive controllers using decorators:

```
import * as smartserve from '@push.rocks/smartserve';

@smartserve.Route('/api/users')
class UserController {
  @smartserve.Get('/')
  async listUsers(ctx: smartserve.IRequestContext): Promise<Response> {
    const users = await getUsersFromDb();
    return new Response(JSON.stringify(users), {
      headers: { 'Content-Type': 'application/json' },
    });
  }

  @smartserve.Get('/:id')
  async getUser(ctx: smartserve.IRequestContext): Promise<Response> {
    const userId = ctx.params.id;
    const user = await getUserById(userId);
    return new Response(JSON.stringify(user), {
      headers: { 'Content-Type': 'application/json' },
    });
  }

  @smartserve.Post('/')
  async createUser(ctx: smartserve.IRequestContext): Promise<Response> {
    const userData = await ctx.json();
    const newUser = await createUserInDb(userData);
    return new Response(JSON.stringify(newUser), {
      status: 201,
      headers: { 'Content-Type': 'application/json' },
    });
  }
}
```

```
// Register the controller
smartserve.ControllerRegistry.registerInstance(new UserController());
```

Programmatic Routes with `addRoute()`

Add routes dynamically using the `addRoute()` API:

```
import { TypedServer } from '@api.global/typedserver';

const server = new TypedServer({ serveDir: './public', cors: true });

// Simple route
server.addRoute('/api/health', 'GET', async (ctx) => {
  return new Response(JSON.stringify({ status: 'ok' }), {
    headers: { 'Content-Type': 'application/json' },
  });
});

// Route with parameters (Express-style :param syntax)
server.addRoute('/api/items/:id', 'GET', async (ctx) => {
  const itemId = ctx.params.id;
  return new Response(JSON.stringify({ id: itemId }), {
    headers: { 'Content-Type': 'application/json' },
  });
});

// Wildcard routes
server.addRoute('/files/*path', 'GET', async (ctx) => {
  const filePath = ctx.params.path;
  return new Response(`Requested: ${filePath}`);
});

await server.start();
```

□□ Type-Safe API Integration

Adding TypedRequest Handlers

```
import { TypedServer } from '@api.global/typedserver';
import * as typedrequest from '@api.global/typedrequest';

// Define your typed request interface
interface IGetUser extends typedrequest.implementsTR<IGetUser> {
  method: 'getUser';
  request: { userId: string };
  response: { name: string; email: string };
}

const server = new TypedServer({ serveDir: './public', cors: true });

// Add a typed handler directly to the server's router
server.typedrouter.addTypedHandler<IGetUser>(
  new typedrequest.TypedHandler('getUser', async (data) => {
    return { name: 'John Doe', email: 'john@example.com' };
  })
);

await server.start();
```

Real-Time WebSocket Communication

TypedServer automatically sets up TypedSocket for real-time communication:

```
import { TypedServer } from '@api.global/typedserver';
import * as typedrequest from '@api.global/typedrequest';

interface IChatMessage extends typedrequest.implementsTR<IChatMessage> {
  method: 'sendMessage';
  request: { text: string; room: string };
  response: { messageId: string; timestamp: number };
}

const server = new TypedServer({ serveDir: './public', cors: true });
```

```
// Handle real-time messages
server.typedrouter.addTypedHandler<IChatMessage>(
  new typedrequest.TypedHandler('sendMessage', async (data) => {
    return { messageId: crypto.randomUUID(), timestamp: Date.now() };
  })
);

await server.start();

// Push messages to connected clients
const connections = await server.typedsocket.findAllTargetConnectionsByTag('allClients');
for (const conn of connections) {
  // Push to specific clients via TypedSocket
}
```

☁ Edge Worker (Cloudflare Workers)

Deploy your application to the edge with Cloudflare Workers:

```
import { EdgeWorker, DomainRouter } from '@api.global/typedserver/edgeworker';

const worker = new EdgeWorker();

// Configure domain routing with caching
worker.domainRouter.addDomainInstruction({
  domainPattern: '*.example.com',
  originUrl: 'https://origin.example.com',
  type: 'cache',
  cacheConfig: { maxAge: 3600 },
});

// Pass-through to origin for API routes
worker.domainRouter.addDomainInstruction({
  domainPattern: 'api.example.com',
  originUrl: 'https://api-origin.example.com',
```

```
  type: 'origin',
});

// Cloudflare Worker entry point
export default {
  fetch: worker.fetchFunction.bind(worker),
};
```

□□ Service Worker Client

Manage service workers in your frontend application:

```
import { getServiceworkerClient } from '@api.global/typedserver/web_serviceworker_client';

// Initialize and register service worker
const swClient = await getServiceworkerClient({
  pollInterval: 30000,  // Poll for updates every 30s
});

// The service worker handles:
// - Cache invalidation from server
// - Offline support
// - Background sync
// - Version updates
```

□□ Bundled Content

Serve pre-bundled content directly from memory — useful for single-binary deployments or embedding assets in server-side code:

```
import { TypedServer } from '@api.global/typedserver';

const server = new TypedServer({
  cors: true,
  bundledContent: [
    {
      path: '/index.html',
```

```
      contentBase64: Buffer.from('<html><body>Hello!</body></html>').toString('base64'),
    },
    {
      path: '/app.js',
      contentBase64: Buffer.from('console.log("loaded")').toString('base64'),
    },
  ],
  spaFallback: true,
});

await server.start();
```

Bundled content takes priority over filesystem serving and supports ETag-based conditional requests with immutable caching.

□□ Security Headers

Configure comprehensive security headers including CSP, HSTS, and more:

```
import { TypedServer } from '@api.global/typedserver';

const server = new TypedServer({
  serveDir: './dist',
  cors: true,

  securityHeaders: {
    // Content Security Policy
    csp: {
      defaultSrc: ["'self'"],
      scriptSrc: ["'self'", "'unsafe-inline'", 'https://cdn.example.com'],
      styleSrc: ["'self'", "'unsafe-inline'"],
      imgSrc: ["'self'", 'data:', 'https:'],
      connectSrc: ["'self'", 'wss:', 'https://api.example.com'],
      fontSrc: ["'self'", 'https://fonts.gstatic.com'],
      frameAncestors: ["'none'"],
      upgradeInsecureRequests: true,
    },
```

```
    // HSTS (HTTP Strict Transport Security)
    hstsMaxAge: 31536000,         // 1 year
    hstsIncludeSubDomains: true,
    hstsPreload: true,

    // Other security headers
    xFrameOptions: 'DENY',
    xContentTypeOptions: true,
    xXssProtection: true,
    referrerPolicy: 'strict-origin-when-cross-origin',

    // Cross-Origin policies
    crossOriginOpenerPolicy: 'same-origin',
    crossOriginEmbedderPolicy: 'require-corp',
    crossOriginResourcePolicy: 'same-origin',

    // Permissions Policy
    permissionsPolicy: {
      camera: [],
      microphone: [],
      geolocation: ['self'],
    },
  },
});

await server.start();
```

Security Headers Reference

Header	Option	Description
`Content-Security-Policy`	`csp`	Controls resources the browser can load
`Strict-Transport-Security`	`hstsMaxAge`, `hstsIncludeSubDomains`, `hstsPreload`	Forces HTTPS connections
`X-Frame-Options`	`xFrameOptions`	Prevents clickjacking attacks
`X-Content-Type-Options`	`xContentTypeOptions`	Prevents MIME-sniffing
`X-XSS-Protection`	`xXssProtection`	Legacy XSS filter
`Referrer-Policy`	`referrerPolicy`	Controls referrer information

Header	Option	Description
`Permissions-Policy`	`permissionsPolicy`	Controls browser features
`Cross-Origin-Opener-Policy`	`crossOriginOpenerPolicy`	Isolates browsing context
`Cross-Origin-Embedder-Policy`	`crossOriginEmbedderPolicy`	Controls cross-origin embedding
`Cross-Origin-Resource-Policy`	`crossOriginResourcePolicy`	Controls cross-origin resource sharing

□□ Compression

TypedServer supports automatic response compression using Brotli and Gzip. Compression is powered by smartserve and enabled by default.

Configuration

```
import { TypedServer } from '@api.global/typedserver';

const server = new TypedServer({
  serveDir: './dist',
  cors: true,

  // Enable with defaults (brotli + gzip, threshold: 1024 bytes)
  compression: true,

  // Or disable completely
  // compression: false,

  // Or configure in detail
  // compression: {
  //   enabled: true,
  //   algorithms: ['br', 'gzip'],    // Preferred order
  //   threshold: 1024,               // Min size to compress (bytes)
  //   level: 4,                      // Compression level (1-11 for brotli, 1-9 for gzip)
  //   exclude: ['/api/stream/*'],    // Skip these paths
  // },
});
```

Compression Options Reference

Option	Type	Default	Description
`enabled`	`boolean`	`true`	Enable/disable compression
`algorithms`	`string[]`	`['br', 'gzip']`	Preferred algorithms in order
`threshold`	`number`	`1024`	Minimum response size (bytes) to compress
`level`	`number`	`4`	Compression level (1-11 for brotli, 1-9 for gzip)
`compressibleTypes`	`string[]`	auto	MIME types to compress
`exclude`	`string[]`	`[]`	Path patterns to skip

□□ Configuration Reference

IServerOptions

Option	Type	Default	Description
`serveDir`	`string`	—	Directory to serve static files from
`bundledContent`	`IBundledContentItem[]`	—	Base64-encoded files to serve from memory
`port`	`number | string`	`3000`	Port to listen on
`cors`	`boolean`	`true`	Enable CORS headers
`watch`	`boolean`	`false`	Watch files for changes
`injectReload`	`boolean`	`false`	Inject live reload script into HTML
`noCache`	`boolean`	`false`	Disable browser caching via response headers
`forceSsl`	`boolean`	`false`	Redirect HTTP to HTTPS
`spaFallback`	`boolean`	`false`	Serve index.html for non-file routes
`sitemap`	`boolean`	`false`	Generate sitemap at `/sitemap`

Option	Type	Default	Description
`feed`	`boolean`	`false`	Generate RSS feed at `/feed`
`robots`	`boolean`	`false`	Serve robots.txt
`domain`	`string`	—	Domain name for sitemap/feeds
`appVersion`	`string`	—	Application version string
`manifest`	`object`	—	Web App Manifest configuration
`publicKey`	`string`	—	SSL certificate
`privateKey`	`string`	—	SSL private key
`defaultAnswer`	`function`	—	Custom default response handler
`feedMetadata`	`object`	—	RSS feed metadata options
`blockWaybackMachine`	`boolean`	`false`	Block Wayback Machine archiving
`securityHeaders`	`ISecurityHeaders`	—	Security headers configuration
`compression`	`ICompressionConfig | boolean`	`true`	Response compression configuration

□□ Package Exports

```
@api.global/typedserver
├── .                          – Main server (TypedServer)
├── /backend                   – Alias for main server
├── /infohtml                  – Info HTML page generator
├── /edgeworker                – Cloudflare Workers edge computing
├── /web_inject                – Live reload script injection
├── /web_serviceworker         – Service Worker implementation
└── /web_serviceworker_client  – Service Worker client utilities
```

□□ Utility Servers

Pre-configured server templates with best practices built-in.

UtilityWebsiteServer

Optimized for modern web applications with SPA support, live reload, and caching disabled by default during development:

```
import { utilityservers } from '@api.global/typedserver';

const websiteServer = new utilityservers.UtilityWebsiteServer({
  serveDir: './dist',
  domain: 'example.com',

  // SPA fallback enabled by default
  spaFallback: true,   // default: true

  // Security headers
  securityHeaders: {
    csp: {
      defaultSrc: ["'self'"],
      scriptSrc: ["'self'", "'unsafe-inline'"],
      styleSrc: ["'self'", "'unsafe-inline'"],
    },
    xFrameOptions: 'SAMEORIGIN',
    xContentTypeOptions: true,
  },

  // Compression (enabled by default)
  compression: true,

  // Other options
  cors: true,          // default: true
  forceSsl: false,     // default: false
  appSemVer: '1.0.0',
  port: 3000,          // default: 3000

  // Optional ads.txt entries (only served if configured)
  adsTxt: [
    'google.com, pub-1234567890, DIRECT, f08c47fec0942fa0',
  ],
```

```
  // RSS feed metadata
  feedMetadata: {
    title: 'My Blog',
    description: 'A cool blog',
    link: 'https://example.com',
  },

  // Add custom routes
  addCustomRoutes: async (typedserver) => {
    typedserver.addRoute('/api/custom', 'GET', async () => {
      return new Response('Custom route!');
    });
  },
});

await websiteServer.start();
```

UtilityServiceServer

Optimized for API services with auto-generated info page:

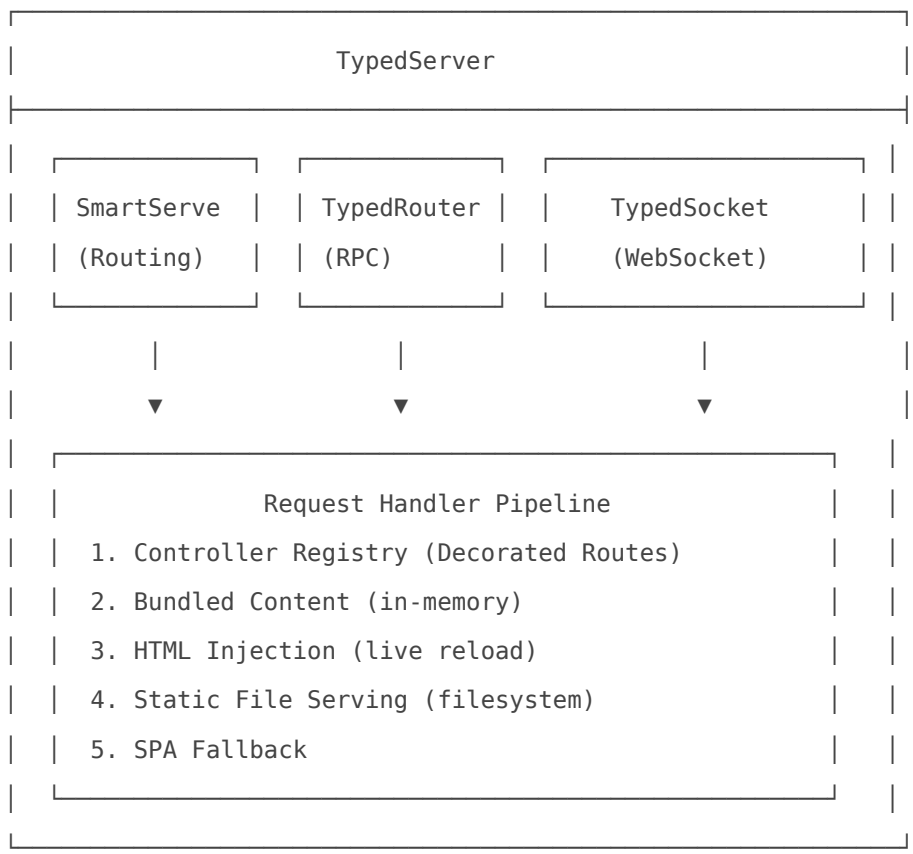
```
import { utilityservers } from '@api.global/typedserver';

const serviceServer = new utilityservers.UtilityServiceServer({
  serviceName: 'My API',
  serviceVersion: '1.0.0',
  serviceDomain: 'api.example.com',
  port: 8080,

  // Add custom routes
  addCustomRoutes: async (typedserver) => {
    typedserver.addRoute('/api/status', 'GET', async () => {
      return new Response(JSON.stringify({ status: 'healthy' }), {
        headers: { 'Content-Type': 'application/json' },
      });
    });
  },
});
```

```
await serviceServer.start();
```

□□ Architecture Overview



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changelog.md for @api.global/typedserver

2026-03-23 - 8.4.6 - fix(deps)

bump @push.rocks/smartwatch to ^6.4.0

- Updates the @push.rocks/smartwatch dependency from ^6.3.1 to ^6.4.0 in package.json.

2026-03-23 - 8.4.5 - fix(build)

migrate build tooling to tsbuild v4 and tsbundle config while updating sitemap integration

- move tsbundle bundle definitions into npmextra.json and simplify build scripts for tsbuild v4
- replace cross-folder imports from dist_ts_interfaces with ts_interfaces source paths to match automatic path rewriting
- update sitemap generation to the smartsitemap v4 builder API for standard and news sitemaps
- refresh package dependencies and documentation for the new build flow and server capabilities

2026-03-23 - 8.4.4 - fix(utilityservers)

enable file watching whenever a static serve directory is configured

- Decouples directory watching from live-reload injection so watched static assets can update even when reload script injection is disabled.
- Changes UtilityWebsiteServer to set watch based solely on the presence of serveDir.

2026-03-23 - 8.4.3 - fix(websiteserver)

only enable file watching when reload injection is active

- Updates WebsiteServer to disable watch mode when injectReload is turned off, even if serveDir is configured.
- Keeps development watching behavior aligned with the reload feature toggle to avoid unnecessary file watching.

2026-03-03 - 8.4.2 - fix(ts_web_inject)

improve ReloadChecker resilience and TypedSocket handling

- Added retry counters and limits for service worker subscription (MAX_SW_RETRIES) and traffic logging setup (MAX_TRAFFIC_LOGGING_RETRIES) to avoid infinite retry loops
- Made TypedSocket connection non-blocking by connecting in the background (createClient().then(...).catch(...)) so HTTP polling isn't blocked
- Introduced typedsocketConnected flag to track WS state and avoid double-connects; early-return if typedsocket exists
- Adjusted connection lifecycle handling: only trigger reload check when reconnect completes; set backendConnectionLost/state appropriately
- Adaptive polling interval: poll every 5s when WebSocket is not connected, otherwise 120s
- Added safer failure handling for TypedSocket connection with warning logs on errors
- Simplified/changed several logger levels/messages (info -> ok/warn) and removed some noisy info logs

2026-03-03 - 8.4.1 - fix(statuspill)

wait for document.body before appending status pill when script loads before

is parsed; defer via DOMContentLoaded or requestAnimationFrame

- Guard against missing document.body to avoid errors when the script runs before the is parsed
- Retry showing on DOMContentLoaded if the document is still loading

- Fallback to requestAnimationFrame to schedule the show on the next frame if DOM is already parsed

2026-02-24 - 8.4.0 - feat(utilityservers)

add injectReload and noCache options and enable dev features by default

- Adds optional configuration properties 'injectReload' and 'noCache' to the website server options interface.
- Dev features (injectReload and noCache) are no longer only enabled when serveDir is set; they now default to true when not explicitly provided.
- This changes default runtime behavior: live-reload injection and disabled browser caching may be enabled for servers that previously did not have them — consumers should set options explicitly to preserve previous behavior.

2026-02-24 - 8.3.1 - fix(typedserver)

no changes detected — no version bump needed

- No files changed in the diff
- Current package version: 8.3.0

2026-01-23 - 8.3.0 - feat(typedserver)

add noCache option to disable client-side caching and set no-cache headers on responses

- Introduces an optional noCache?: boolean in the server options interface
- applyResponseHeaders now sets Cache-Control, Pragma, and Expires headers when noCache is true
- Existing CORS and security header behavior unchanged when noCache is not set or false

2026-01-23 - 8.2.0 - feat(typedserver)

serve bundled in-memory content with caching and reload injection

- Add IBundledContentItem and IServerOptions.bundledContent to accept tsbundle output (path + contentBase64).
- Initialize in-memory bundled content map with MIME type detection, SHA-256-based ETag, size and combined app hash.
- Serve bundled files with proper Content-Type, ETag, Cache-Control, support HEAD and conditional 304 responses.
- Inject live-reload script into bundled HTML responses when injectReload is enabled; modify SPA fallback to prefer bundled index.html.
- Require serveDir or bundledContent when injectReload is enabled; prefer in-memory bundled content over filesystem requests.
- Add helper methods: initializeBundledContent, getMimeType, serveBundledContent and serveBundledHtmlWithInjection; log initialization.

2025-12-22 - 8.1.0 - feat(types)

export IRequestContext type from @push.rocks/smartserve for consumers to use in route handlers

- Adds a type export: IRequestContext from @push.rocks/smartserve
- Type-only change — no runtime or behavioral changes

2025-12-20 - 8.0.0 - BREAKING CHANGE(typedserver)

migrate route handlers to use IRequestContext and lazy body parsers

- Route handlers now receive plugins.smartserve.IRequestContext instead of Request (breaking API change). addRoute no longer wraps handlers to convert context → Request.
- createContext() is now synchronous and provides lazy body accessors: ctx.json(), ctx.text(), ctx.arrayBuffer(), ctx.formData(); ctx.body property was removed.
- DevToolsController constructor now accepts optional options and supplies no-op defaults so controllers can be auto-instantiated without args.

- TypedRequest controller now reads the request via await ctx.json() and forwards typed requests accordingly.
- Utility website server handlers and other internal callsites updated to use ctx.params and the new context API.
- Tests updated to the new TypedServer API, improved assertions, changed test port and reduced delays, and switched tap runner export to default.
- Bumped dependency @push.rocks/smartserve to ^2.0.1 to match API changes.
- npmextra.json reorganized git.zone/tsdoc entries and added release registries and @ship.zone/szci metadata.

2025-12-08 - 7.11.1 - fix(dependencies)

Upgrade dependencies: bump @design.estate/dees-catalog to v3.1.1 and @push.rocks/smartwatch to v6.0.0; update migration notes in readme.hints.md

- package.json: @design.estate/dees-catalog updated from ^2.0.3 to ^3.1.1 (includes new icons, components and DeesIcon unified icon property; legacy iconFA deprecated)
- package.json: @push.rocks/smartwatch updated from ^5.0.0 to ^6.0.0 (cross-runtime support, native fs.watch, API compatibility maintained: new Smartwatch class methods and events documented)
- readme.hints.md: added migration notes for smartwatch v6 and dees-catalog v3, plus other dependency update summaries

2025-12-08 - 7.11.0 - feat(typedserver)

Add configurable response compression (Brotli + Gzip) with defaults enabled and documentation

- Expose a new compression option on IServerOptions (plugins.smartserve.ICompressionConfig | boolean).
- Pass the compression setting through to SmartServe (smartServeOptions.compression = this.options.compression).
- Add compression option to UtilityWebsiteServer and forward it when creating SmartServe options.
- Update README: new Compression section with global config examples, per-route decorator usage, and options reference.

- Add a small readme.todo.md with service worker wake/reload TODO notes.

2025-12-05 - 7.10.2 - fix(docs)

Update README with routing examples and utility server config; bump @cloudflare/workers-types and @push.rocks/smartserve versions

- Bumped dependency @cloudflare/workers-types to ^4.20251205.0
- Bumped dependency @push.rocks/smartserve to ^1.3.0
- Expanded README: added decorator-based routing examples (Route/Get/Post) using smartserve
- Added programmatic routing examples (addRoute) and SPA/wildcard route samples
- Enhanced UtilityWebsiteServer and UtilityServiceServer docs: default port, ads.txt, feedMetadata, addCustomRoutes example and other config options
- Clarified security headers descriptions and configuration reference
- Updated Quick Start console message to show running port ("Server running on port 3000!")
- Documented EdgeWorker/domain routing caching example and noted service worker version update behavior
- Adjusted TypedSocket example tag to use 'allClients' in README

2025-12-05 - 7.10.1 - fix(typedserver)

Use smartserve ControllerRegistry for custom routes and remove custom route parsing

- addRoute now delegates to plugins.smartserve.ControllerRegistry instead of building its own regex-based matcher
- Backwards compatibility: incoming smartserve IRequestContext is converted to a Request and ctx.params is attached to request.params before invoking the handler
- Removed internal IRegisteredRoute, customRoutes storage, and parseRouteParams helper
- Request handling now uses ControllerRegistry.matchRoute and registered controllers are compiled via ControllerRegistry.compileRoutes()

2025-12-05 - 7.10.0 - feat(website-server)

Add configurable ads.txt support to website server

- Introduce adsTxt?: string[] option to the server options to allow configuring ads.txt entries.
- Serve /ads.txt only when adsTxt is provided; the route is not registered if no entries are configured.
- Replace previous hard-coded Google ads.txt entry with values joined from the provided adsTxt array and served as text/plain.
- Preserves existing behavior when adsTxt is not set (no /ads.txt endpoint will be exposed).

2025-12-05 - 7.9.0 - feat(typedserver)

Add configurable security headers and default SPA behavior

Introduce structured security headers support (CSP, HSTS, X-Frame-Options, COOP/COEP/CORP, Permissions-Policy, Referrer-Policy, X-XSS-Protection, etc.) and apply them to responses and OPTIONS preflight. Expose configuration via the server API and document usage. Also update UtilityWebsiteServer defaults (SPA fallback enabled by default) and related docs.

- Add ISecurityHeaders and IContentSecurityPolicy TypeScript interfaces to configure CSP, HSTS and other security-related headers.
- Implement buildCspHeader to serialize CSP config and applyResponseHeaders to add CORS and all configured security headers to outgoing responses.
- Apply security headers to OPTIONS preflight responses and all other responses by default when securityHeaders option is provided.
- Add securityHeaders option to IServerOptions and wire it through TypedServer and UtilityWebsiteServer constructors.
- Update UtilityWebsiteServer: renamed template to UtilityWebsiteServer, enable SPA fallback by default, expose options (cors, spaFallback, securityHeaders, forceSsl, port, feedMetadata, etc.) and forward them into the TypedServer instance.
- Documentation: add Security Headers section and example usage to readme.md; document the UtilityWebsiteServer defaults and example.
- Ensure CORS headers are only added when cors option is enabled.

2025-12-05 - 7.8.18 - fix(readme)

Update README to reflect new features and updated examples (SPA/PWA/Edge/ServiceWorker) and clarify API usage

- Rewrite project introduction and features list to highlight Service Worker, Edge Workers, SPA support, and PWA readiness
- Replace and expand example sections: Basic Server, Full Configuration, TypedRequest handlers, WebSocket usage, Edge Worker entrypoint, and Service Worker client usage
- Update configuration reference: remove legacy compression flags, add spaFallback, defaultAnswer, feedMetadata, and blockWaybackMachine options
- Document package exports and add examples for utility servers (WebsiteServer, ServiceServer)
- Clarify TypedRequest/TypedSocket usage by showing server.typedrouter and service worker client initializer (getServiceworkerClient)

2025-12-04 - 7.8.11 - fix(web_inject)

Improve logging in web injection (TypedRequest) and update dees-comms dependency

- Add debug logging to ts_web_inject to explicitly filter serviceworker_* methods and avoid infinite loops
- Log incoming TypedRequest methods for better visibility during debugging
- Bump dependency @design.estate/dees-comms from ^1.0.27 to ^1.0.28

2025-12-04 - 7.8.0 - feat(serviceworker)

Add TypedRequest traffic monitoring and SW dashboard 'Requests' panel

- Add TypedRequest traffic monitoring interfaces and shared SW dashboard HTML (SW_DASH_HTML) to ts_interfaces/serviceworker.ts.
- Introduce RequestLogStore (ts_web_serviceworker/classes.requestlogstore.ts) to collect, persist in-memory, and compute stats for TypedRequest traffic (logs, counts, methods, averages).
- Add service worker backend handlers to receive and broadcast TypedRequest logs and to expose endpoints: serviceworker_typedRequestLog, serviceworker_getTypedRequestLogs, serviceworker_getTypedRequestStats, serviceworker_clearTypedRequestLogs.
- Expose HTTP routes and fallback behaviors in the server built-in controller to serve the SW dashboard (GET /sw-dash and /sw-dash/bundle.js) and to return sensible 503 placeholders when the SW is not active.

- Extend the service worker CacheManager and DashboardGenerator to serve TypedRequest-related endpoints (/sw-dash/requests, /sw-dash/requests/stats, /sw-dash/requests/methods) and to integrate RequestLogStore data into the dashboard APIs.
- Add a Lit-based dashboard component sw-dash-requests (ts_swdash/sw-dash-requests.ts) and integrate it into the main sw-dash-app UI to display live TypedRequest traffic with filtering, payload toggles, pagination and clear logs action.
- Enable client-side traffic logging from the injected reload checker (ts_web_inject/index.ts) by setting global TypedRouter hooks that send log entries to the service worker, with safeguards to avoid logging the logging requests themselves.
- Add action manager utilities (ts_web_serviceworker_client/classes.actionmanager.ts) to log TypedRequest entries to the SW, query logs and stats, clear logs, and subscribe to real-time TypedRequest broadcasts.
- Refactor Dashboard HTML generation to use the shared SW_DASH_HTML constant so server and service worker serve the same UI shell.
- Integrate broadcasting of TypedRequest log events from service worker backend to connected clients so the SW dashboard updates in real time.

2025-12-04 - 7.7.1 - fix(web_serviceworker)

Standardize DeesComms message format in service worker backend

- Add createMessage helper to generate consistent TypedRequest-shaped messages (includes messageId and correlation.id/phase).
- Replace inline postMessage payloads with createMessage(...) calls across ServiceworkerBackend (status updates, new-version broadcasts, alerts, event pushes, metrics updates, resource-cached notifications).
- Improves message consistency and enables easier correlation/tracing of DeesComms messages; behavior should remain backward-compatible.

2025-12-04 - 7.7.0 - feat(typedserver)

Add SPA fallback support to TypedServer

- Introduce new IServerOptions.spaFallback boolean to enable SPA routing fallback.

- When enabled, GET requests for paths without a file extension will serve serveDir/index.html.
- Preserves existing HTML injection behavior: injectReload still injects devtools script and typedserver metadata into when enabled.
- Responses from SPA fallback include Cache-Control: no-cache and appHash header for cache-busting; falls through to 404 on errors.
- Non-file routes that contain a dot (.) are not considered for SPA fallback to avoid interfering with asset requests.

2025-12-04 - 7.6.0 - feat(typedserver)

Remove legacy Express-based servertools, drop express deps, and refactor TypedServer to SmartServe + typedrouter with CORS support

- Remove legacy ts/servertools module and many Express-based helpers (classes.server, handler, handlerstatic, handlerproxy, compressor, sitemap, feed, tools.*). The servertools compatibility layer is no longer available.
- Drop express-related dependencies from package.json (@types/express, express, body-parser, cors, express-force-ssl).
- Refactor core API: ts/index.ts no longer exports servertools and ts/plugins.ts no longer re-exports Express middleware — consumers must migrate to SmartServe/typedrequest/typedsocket primitives.
- TypedServer rewritten: integrates with @push.rocks/smartserve ControllerRegistry, adds custom route parsing, CORS header helper and OPTIONS preflight handling, improved static file handling with optional reload injection, file watching, typedrouter and typedsocket integration.
- UtilityWebsiteServer now registers the serviceworker versionInfo handler on typedrouter instead of using the removed servertools.serviceworker helper.
- This is a breaking change — public APIs and dependency surface changed; bump major version.

2025-12-04 - 7.5.0 - feat(serviceworker)

Add real-time service worker push updates and DeesComms integration (metrics, events, resource caching)

- Integrate DeesComms push channel for real-time SW → client communication and export/consume deesComms in relevant plugin modules.
- Add typed push message interfaces for events, metrics snapshots and resource-cached notifications in serviceworker interfaces.
- Implement backend push methods: pushEvent, pushMetricsUpdate (with 500ms throttle) and pushResourceCached in ServiceworkerBackend.
- Trigger push updates from MetricsCollector and PersistentStore so metrics and logged events are broadcast to connected clients.
- Add client-side DeesComms handlers in sw-dash app: receive metrics, event logs and resource notifications; add heartbeat and initial HTTP seed to maintain SW health state.
- Add event push listener and cleanup in sw-dash-events component to prepend incoming events and avoid leaks.
- Expose getServiceWorkerBackend() from SW init for internal modules to call push methods.
- Misc: implement request deduplication and various robustness improvements (throttling, heartbeat, safer polling, removed noisy debug logs).

2025-12-04 - 7.4.1 - fix(web_serviceworker)

Improve service worker persistence, metrics and caching robustness

- Ensure persistent store is initialized before use in dashboard handlers and service worker activation/handlers (calls to persistentStore.init())
- Make serveCumulativeMetrics async and align fetchEvent.respondWith usage (remove unnecessary Promise.resolve)
- Change persistent WebStore database name to 'losslessServiceworkerPersistent' to separate durable store from runtime store
- Make PersistentStore.init() more resilient: add detailed logging, avoid throwing on init failure, mark initialized to prevent retry loops, and start periodic save only after load
- Ensure logEvent awaits initialization and adds defensive logging around reading/writing the event log
- Add request deduplication logic and improved cache handling in CacheManager (fetchWithDeduplication usage and safer respondWith)

2025-12-04 - 7.4.0 - feat(serviceworker)

Add persistent event store, cumulative metrics and dashboard events UI for service worker observability

- Add PersistentStore (ts_web_serviceworker/classes.persistentstore.ts) to persist event log and cumulative metrics with retention policy and periodic saving.
- Introduce persistent event types and interfaces for event log and cumulative metrics (ts_interfaces/serviceworker.ts).
- Log lifecycle, update, network and speedtest events to the persistent store (install, activate, update available/applied/error, network online/offline, speedtest started/completed/failed, cache invalidation).
- Expose persistent-store APIs via typed handlers in the service worker backend: serviceworker_getEventLog, serviceworker_getCumulativeMetrics, serviceworker_clearEventLog, serviceworker_getEventCount.
- Serve new dashboard endpoints from the service worker: /sw-dash/events (GET), /sw-dash/events/count (GET), /sw-dash/cumulative-metrics (GET) and DELETE /sw-dash/events to clear the log (handled in classes.cachemanager and classes.dashboard).
- Add sw-dash events panel component (ts_swdash/sw-dash-events.ts) and integrate an Events tab into the dashboard UI (ts_swdash/sw-dash-app.ts, sw-dash-overview.ts shows 1h event count).
- Reset cumulative metrics on cache invalidation and increment swRestartCount on PersistentStore.init().
- Record speedtest lifecycle events (started/completed/failed) and include details in the event log.

2025-12-04 - 7.3.0 - feat(serviceworker)

Modernize SW dashboard UI and improve service worker backend and server tooling

- Revamped sw-dash UI: new header/logo, uptime badge, live auto-refresh indicator, reorganized panels and improved speedtest UI and controls
- Shared styles overhaul: new theming variables, spacing scale, badges, refined progress/pulse animations and cleaner typography
- Dashboard internals: metrics endpoint and SPA shell updated; Lit bundle loading and table sort icon changed to ↑/↓
- Service worker: added request deduplication (in-flight request coalescing), safer caching logic, consistent CORS/caching headers, and cache revalidation
- Metrics: richer MetricsCollector with per-resource tracking, domain/content-type stats, speedtest metrics and better summary/stat helpers
- Update & network managers: rate-limited update checks, debounced update/revalidation tasks, online/offline checks and improved retry/backoff logic

- TypedServer & tooling: addRoute API for custom routes, improved HTML reload script injection, TypedSocket integration and a backend speedtest handler
- servertools: improved static/proxy handlers (more robust path extraction, compression handling) and deprecation notice for addTypedSocket()

2025-12-04 - 7.2.0 - feat(serviceworker)

Add service worker status updates, EventBus and UI status pill for realtime observability

- Introduce a status update protocol for service worker <-> clients (IStatusUpdate, IMessage_Serviceworker_StatusUpdate, IRequest_Serviceworker_GetStatus).
- Add typedserver-statuspill Lit component to display backend/serviceworker/network status in the UI, with expand/collapse details and persistent/error states.
- Wire ReloadChecker to use the new status pill: show network/backend/serviceworker status, handle online/offline events, and subscribe to service worker status broadcasts.
- Extend ActionManager (client) with subscribeToStatusUpdates and getServiceWorkerStatus helpers; forward serviceworker_statusUpdate broadcasts to registered callbacks.
- Serviceworker backend: add serviceworker_getStatus handler and broadcastStatusUpdate API; subscribe to EventBus lifecycle/network/update events to broadcast status changes to clients.
- Add EventBus for decoupled service worker internal events (ServiceWorkerEvent enum, pub/sub API, history and convenience emitters).
- Ensure proper subscribe/unsubscribe lifecycle (ReloadChecker stops SW subscription on stop).
- Improve cache/connection status reporting integration so status updates include details like cacheHitRate, resourceCount and connected clients.

2025-12-04 - 7.1.0 - feat(swdash)

Add live speedtest progress UI to service worker dashboard

- Introduce reactive speedtest state (phase, progress, elapsed) in sw-dash-overview component
- Start a progress interval to animate overall test progress and estimate phases (latency, download, upload)
- Dispatch 'speedtest-complete' event and show a brief complete state before resetting UI
- Add helper methods for phase labels and elapsed time formatting

- Add CSS for progress bar, shimmer animation and phase pulse to sw-dash-styles

2025-12-04 - 7.0.0 - BREAKING CHANGE(serviceworker)

Move serviceworker speedtest to time-based chunked transfers and update dashboard/server contract

- Change speedtest protocol to time-based chunk transfers: new request types 'download_chunk' and 'upload_chunk' plus 'latency'. Clients should call chunk requests in a loop for the desired test duration.
- IRequest_Serviceworker_Speedtest interface updated: request fields renamed/changed (chunkSizeKB, payload) and response no longer includes durationMs or speedMbps — server now returns bytesTransferred, timestamp, and optional payload.
- TypedServer speedtest handler updated to support 'download_chunk' and 'upload_chunk' semantics and to return bytesTransferred/timestamp/payload only (removed server-side duration/speed calculation).
- Dashboard runSpeedtest now performs time-based tests (TEST_DURATION_MS = 5000, CHUNK_SIZE_KB = 64) by repeatedly requesting chunks and computing throughput on the client side.
- Documentation/comments updated to clarify new speedtest behavior and default chunk sizes.

2025-12-04 - 6.8.1 - fix(web_serviceworker)

Move service worker initialization to init.ts and remove exports from service worker entrypoint to avoid ESM bundle output

- Remove exports from ts_web_serviceworker/index.ts so the service worker entrypoint does not export symbols (prevents tsbundle from producing ESM output).
- Add ts_web_serviceworker/init.ts which initializes the ServiceWorker instance and exports getServiceWorkerInstance() for internal imports.
- Update ts_web_serviceworker/classes.dashboard.ts to import getServiceWorkerInstance from init.ts instead of index.ts.

2025-12-04 - 6.8.0 - feat(swdash)

Add SW-Dash (Lit-based service worker dashboard), bundle & serve it; improve servertools and static handlers

- Add a new sw-dash frontend (ts_swdash) implemented with Lit: sw-dash-app, sw-dash-overview, sw-dash-urls, sw-dash-domains, sw-dash-types, sw-dash-table, shared styles and plugin shims.
- Wire sw-dash into build pipeline and packaging: add ts_swdash bundle to npm build script and include ts_swdash in package files.
- Serve the dashboard bundle: add paths (swdashBundleDir / swdashBundlePath) and a built-in route (/sw-dash/bundle.js) in BuiltInRoutesController.
- Simplify service-worker dashboard HTML output to a minimal shell that mounts and loads the module /sw-dash/bundle.js (reduces inline HTML/CSS/JS duplication).
- Lazy-load service worker bundle and source map in servertools.tools.serviceworker and expose /sw-typedrequest endpoints for SW typed requests (including speedtest handler).
- Enhance compression utilities and static serving: Compressor now caches compressed results, prioritizes preferred compression methods, provides safer zlib calls, and exposes createCompressionStream; HandlerStatic gained improved path resolution, Express 5 wildcard handling and optional compression flow.
- Improve proxy/static handler path handling to be compatible with Express 5 wildcard parameters and more robust fallback logic.
- Deprecate Server.addTypedSocket (no-op) and document recommended SmartServe/TypedServer integration for WebSocket support.
- Various minor packaging/path updates (paths.ts, plugins exports) to support the new dashboard and bundles.

2025-12-04 - 6.7.0 - feat(web_serviceworker)

Add per-resource metrics and request deduplication to service worker cache manager

- Introduce per-resource tracking in metrics: ICachedResource, IDomainStats, IContentTypeStats and a resourceStats map.
- Add MetricsCollector.recordResourceAccess(...) to record hits/misses, content-type and size; provide getters: getCachedResources, getDomainStats, getContentTypeStats and getResourceCount.
- Reset resourceStats when metrics are reset and limit resource entries via cleanupResourceStats to avoid memory bloat.

- Add request deduplication in CacheManager (fetchWithDeduplication) to coalesce identical concurrent fetches and a periodic safety cleanup for in-flight requests.
- Record resource accesses on cache hit and when storing new cache entries (captures content-type and body size).
- Expose a dashboard resources endpoint (/sw-dash/resources) served by the SW dashboard to return detailed resource data for SPA views.

2025-12-04 - 6.6.0 - feat(web_serviceworker)

Enable service worker dashboard speedtests via TypedSocket, expose ServiceWorker instance to dashboard, and add server-side speedtest handler

- Add `serviceworker_speedtest` typed handler in TypedServer to support download/upload/latency tests from service workers
- Export `getServiceWorkerInstance` from the web_serviceworker entrypoint so other modules (dashboard) can access the running ServiceWorker instance
- Make ServiceWorker.typedsocket and ServiceWorker.typedrouter public to allow the dashboard to create and fire TypedSocket requests
- Update dashboard to run latency, download and upload tests over TypedSocket instead of POSTing to /sw-typedrequest
- Deprecate legacy servertools.Server.addTypedSocket (now a no-op) and recommend using TypedServer with SmartServe integration for WebSocket support

2025-12-04 - 6.5.0 - feat(serviceworker)

Add server-driven service worker cache invalidation and TypedSocket integration

- TypedServer: push cache invalidation messages to service worker clients (tagged 'serviceworker') before notifying frontend clients on reload
- Service Worker: connect to TypedServer via TypedSocket; handle 'serviceworker_cacheInvalidate' typed request to clean caches and trigger client reloads
- Web inject: add fallback to clear caches via the Cache API when global service worker helper is not available
- Interfaces: add IRequest_Serviceworker_CacheInvalidate typedrequest interface
- Plugins: export typedsocket in web_serviceworker plugin surface

- Service worker connection: retry logic and improved logging for TypedSocket connection attempts

2025-12-04 - 6.4.0 - feat(serviceworker)

Add speedtest support to service worker and dashboard

- Add serviceworker_speedtest typed request handler to measure download, upload and latency
- Expose dashboard speedtest endpoint (/sw-dash/speedtest) and integrate runSpeedtest flow
- Dashboard UI: add speedtest panel, run button, visual speed bars and online indicator
- Metrics: introduce ISpeedtestMetrics and methods (recordSpeedtest, setOnlineStatus, getSpeedtestMetrics) and include speedtest data in metrics output
- Server/tools: add typedrequest handling for speedtest in sw-typedrequest and route service worker dashboard path in CacheManager

2025-12-04 - 6.3.0 - feat(web_serviceworker)

Add advanced service worker subsystems: cache deduplication, metrics, update & network managers, event bus and dashboard

- CacheManager: request deduplication for concurrent fetches, safer caching (preserve CORS headers), periodic in-flight cleanup and full cache cleaning API
- Fetch handling: improved handling for same-origin vs cross-origin requests, more robust 500 debug responses when upstream fetch fails
- UpdateManager: rate-limited update checks, offline grace period, debounced update and cache revalidation tasks, forceUpdate logic and persisted version/cache timestamps
- NetworkManager: online/offline detection, retry/backoff, request timeouts and more resilient makeRequest implementation
- EventBus: singleton pub/sub with history, once/onMany/onAll helpers and convenience emitters for cache/network/update events
- MetricsCollector: comprehensive metrics for cache, network, updates and connections with helper methods and JSON/HTML dashboard endpoints (/sw-dash, /sw-dash/metrics)

- ErrorHandler & ServiceWorkerError: structured error types, severity, context, history and helper APIs for consistent error reporting
- ServiceWorker & backend: improved install/activate flows, clients.claim(), cache cleaning on activation, backend APIs to purge cache and trigger reloads/notifications
- TypedServer / servertools: addRoute path pattern parsing (named params & wildcards), safer HTML injection for reload script, TypedRequest controller and service worker route helpers
- Various safety and compatibility improvements (response cloning, header normalization, cache-control decisions, and fallback behaviors)

2025-12-04 - 6.2.0 - feat(web_serviceworker)

Add service-worker dashboard and request deduplication; improve caching, metrics and error handling

- Add DashboardGenerator to serve an interactive terminal-style dashboard at /sw-dash and a metrics JSON endpoint at /sw-dash/metrics
- Introduce request deduplication in CacheManager to coalesce concurrent network fetches and avoid duplicate requests
- Add periodic cleanup for in-flight request tracking to prevent unbounded memory growth
- Improve caching flow: preserve response headers (excluding cache-control headers), ensure CORS headers and Cross-Origin-Resource-Policy, and store response bodies as blobs to avoid locked stream issues
- Provide clearer 500 error HTML responses for failed fetches to aid debugging
- Integrate metrics and event emissions for network and cache operations (record request success/failure, cache hits/misses, and emit corresponding events)

2025-12-04 - 6.1.0 - feat(web_serviceworker)

Enhance service worker subsystem: add metrics, event bus, error handling, config and caching/update improvements; make client connection & polling robust

- Introduce MetricsCollector (cache, network, update, connection) for runtime observability and APIs to retrieve metrics

- Add EventBus singleton to emit/subscribe to internal SW events (cache hits/misses, network events, update lifecycle, connection events)
- Add ErrorHandler and ServiceWorkerError types for consistent error classification and tracking
- Add ServiceWorkerConfig with defaults and WebStore persistence to centralize SW settings (cache, update, network, blocked/cacheable domains)
- CacheManager: implement request deduplication (in-flight request coalescing), periodic in-flight cleanup, record cache hit/miss metrics and safer cache storing (headers/body handling)
- UpdateManager: rate-limited and concurrency-safe update checks, improved stale-cache handling, event emissions, debounced update and revalidation tasks, and metrics recording
- NetworkManager: enhanced online/offline detection and robust request retries/timeouts/backoff handling
- ServiceworkerBackend: improved client reload logic and notification handling via DeesComms and clients API
- Serviceworker client-side: ActionManager.waitForServiceWorkerConnection now returns a structured result with timeout/retries/backoff; ServiceworkerClient gains controllable polling (AbortController), visibility-based pause/resume, manual trigger and lifecycle cleanup
- Expose serviceworker bundle routes at both nested and root paths (/serviceworker/*splat and /serviceworker.bundle.js(.map)) in servertools
- Add/extend typed interfaces for serviceworker metrics and connection results

2025-12-04 - 6.0.1 - fix(web_inject)

Use TypedSocket status API in web_inject and bump dependencies

- ts_web_inject: switch from typedsocket.addTag + eventSubject to await typedsocket.setTag + statusSubject; update logging and handle 'reconnecting' status as backend connection loss
- Await setTag call to ensure tag is applied before relying on socket state
- Bump dependencies: @api.global/typedrequest -> ^3.1.11, @api.global/typedsocket -> ^4.1.0, @push.rocks/smartserve -> ^1.1.2

2025-12-03 - 6.0.0 - BREAKING CHANGE(servertools.Server.addTypedSocket)

Deprecate Server.addTypedSocket and upgrade typedsocket to v4; make addTypedSocket a no-op and log a deprecation warning. Bump tsbundle devDependency.

- Upgrade dependency @api.global/typedsocket to ^4.0.0. TypedSocket v4 no longer supports attaching to an existing Express server.
- Deprecate servertools.Server.addTypedSocket(): the method is now a no-op and emits a console.warn directing users to use TypedServer with SmartServe integration for WebSocket support.
- Bump devDependency @git.zone/tsbundle to ^2.6.3.
- Breaking change: any consumer code that relied on addTypedSocket to attach a WebSocket server to an existing Express instance will need to migrate to the new SmartServe/TypedServer integration.

2025-12-02 - 5.0.0 - BREAKING CHANGE(devtools)

Switch /reloadcheck endpoint from GET to POST in DevToolsController

- Updated ts/controllers/controller.devtools.ts: decorator changed from @plugins.smartserve.Get('/reloadcheck') to @plugins.smartserve.Post('/reloadcheck').
- Clients that previously performed GET requests against /reloadcheck must be updated to use POST. This is a breaking API change.
- Bump major version to reflect the change in the public HTTP API.

2025-12-02 - 4.1.1 - fix(classes.typedserver)

Instantiate and register DevToolsController only when injectReload is enabled; compile ControllerRegistry routes after registration

- DevToolsController is now created and registered only if options.injectReload is true to avoid unnecessary/invalid registrations when live reload is disabled.
- ControllerRegistry.compileRoutes() is invoked after registering controllers to precompile decorated routes for faster route matching.

2025-12-02 - 4.1.0 - feat(TypedServer)

Integrate SmartServe controller routing; add built-in routes controller and refactor TypedServer to use controllers and FileServer

- Add BuiltInRoutesController exposing /robots.txt, /manifest.json, /sitemap, /sitemap-news, /feed and /appversion
- Refactor TypedRequestHandler into a SmartServe-decorated TypedRequestController and register it with ControllerRegistry
- Refactor TypedServer to use SmartServe: register controller instances, use ControllerRegistry matching, and delegate WebSocket integration to SmartServe
- Introduce FileServer-based static serving with HTML reload script injection and improved default root handling
- Expand supported HTTP methods to include HEAD and OPTIONS
- Remove legacy FeedHelper and consolidate sitemap/feed handling into controllers and helpers
- Enhance servertools legacy Express utilities: improved HandlerProxy, HandlerStatic, Compressor with caching and preferred compression support
- Service worker subsystem improvements: CacheManager, NetworkManager, UpdateManager and backend enhancements for robust caching, revalidation and client reloads
- Web-inject LitElement properties switched from private fields to accessor syntax (typedserver_web.infoscreen)

2025-12-02 - 4.0.0 - BREAKING CHANGE(typedserver)

Migrate to new push.rocks packages and async smartfs API; replace smartchok with smartwatch; update deps and service worker handling

- Major dependency updates: @push.rocks packages upgraded (smartfile -> v13, smartfs added v1.2.0, smartenv v6, smartrequest v5, smartwatch v5, webrequest v4), Express and dev-tooling bumped.
- Replace sync smartfile APIs with async SmartFs instance (plugins.fsInstance). All file reads now use async smartfs calls.
- smartfile v13 migration: removed sync fs helpers; added plugins.fsInstance (SmartFs + Node provider).

- Renamed file watcher usage: Smartchok -> Smartwatch and property names updated (smartwatchInstance).
- WebRequest class rename handled: WebRequest -> WebrequestClient (webrequest v4).
- Service worker bundle is lazy-loaded (avoid startup sync file reads) and added routes for bundle and source map.
- Service worker & SW-related improvements: more robust caching, enhanced cache headers, offline handling, revalidation, and update forcing logic.
- createServeDirHash now uses smartfs.directory().recursive().treeHash() and truncates hash to 12 chars; fallback hash logic retained.
- HandlerStatic, HandlerProxy and route handling hardened for Express 5 wildcard params (array/various shapes supported).
- Various runtime improvements: safer start/stop handling, improved error logging, and non-blocking initialization of optional features (file watcher, TypedSocket).
- Updated tooling/dev deps: @git.zone/tsbuild/tsbundle/tstest and @types/node updated.

2025-11-19 - 3.0.80 - fix(dependencies)

Bump dependencies and devDependencies to updated versions

- Upgrade @push.rocks/smartfeed: ^1.0.11 → ^1.4.0
- Upgrade @push.rocks/smartfile: ^11.2.5 → ^11.2.7
- Upgrade @push.rocks/smartjson: ^5.0.20 → ^5.2.0
- Upgrade @push.rocks/smartlog: ^3.1.8 → ^3.1.10
- Upgrade @push.rocks/smartsitemap: ^2.0.3 → ^2.0.4
- Upgrade @push.rocks/taskbuffer: ^3.1.7 → ^3.4.0
- Upgrade @tsclass/tsclass: ^9.2.0 → ^9.3.0
- Upgrade @types/express: ^5.0.3 → ^5.0.5
- Dev: Upgrade @git.zone/tsbuild: ^2.6.4 → ^3.1.0
- Dev: Upgrade @git.zone/tsbundle: ^2.5.1 → ^2.5.2
- Dev: Upgrade @git.zone/tsrun: ^1.3.3 → ^2.0.0
- Dev: Upgrade @git.zone/tstest: ^2.3.4 → ^2.8.2

2025-09-03 - 3.0.79 - fix(servertools)

Normalize Express wildcard parameter notation to /{*splat} across server routes and handlers; add local Claude settings

- Replaced route pattern '/*splat' with '/{*splat}' in ts/classes.typedserver.ts and ts/servertools/tools.sslredirect.ts
- Updated Express options route to use '/{*splat}' in ts/servertools/classes.server.ts
- Clarified wildcard handling comments and array-join logic for splat params in ts/servertools/classes.handlerproxy.ts and ts/servertools/classes.handlerstatic.ts
- Added .claude/settings.local.json containing local tool permissions for Claude/dev onboarding
- No functional API changes — routing pattern normalization and comment/handler improvements only

2025-09-03 - 3.0.78 - fix(servertools)

Fix wildcard path extraction for static/proxy handlers, correct serviceworker route, add local settings and test typo fix

- Make HandlerProxy and HandlerStatic robust to Express 5 wildcard param shapes (handle req.params.splat, numeric params, req.baseUrl and root routes) to correctly compute relative paths
- Change serviceworker route registration to use '/serviceworker/*splat' (instead of previous pattern) for consistent wildcard handling
- Fix test wording typo in test/test.server.ts ('exposer' -> 'expose')
- Add .claude/settings.local.json with local tool permissions and add .serena/.gitignore to ignore /cache

2025-08-17 - 3.0.77 - fix(servertools)

Adjust route wildcard patterns and CORS handling; update serviceworker and SSL redirect patterns; bump express dependency; add local Claude settings

- Normalize route wildcard patterns to use splat tokens (e.g. '/someroute/*' -> '/someroute/*splat*', '/' -> '/*splat') for consistent route matching
- Update serviceworker route registration to '/serviceworker{.*}' and adjust related handler
- Change SSL redirect route from '*' to '/*splat'
- Adjust CORS preflight options path to '/*splat' and update tests to reflect new route patterns

- Bump express dependency from ^4.21.2 to ^5.1.0
- Add .claude/settings.local.json for local Claude tool permissions

2025-08-16 - 3.0.76 - fix(handlerproxy)

Use SmartRequest API and improve proxy/asset response handling; update tests and bump dependencies; add local project configuration files

- Replace deprecated smartrequest.request usage with SmartRequest fluent API in ts/servertools/classes.handlerproxy.ts and add explicit handling for GET/POST/PUT/DELETE/PATCH methods.
- Normalize proxied response body handling by using arrayBuffer()/text() and converting to Buffer to avoid body type inconsistencies.
- Switch asset fetching in ts/utilityservers/classes.websiteserver.ts to SmartRequest + arrayBuffer for reliable binary handling.
- Update tests (test/test.server.ts) to use SmartRequest.create() and to read response bodies via response.text(), matching the updated request API.
- Bump dependencies: @push.rocks/smartrequest -> ^4.2.1 and body-parser -> ^2.2.0.
- Add local project configuration files: .claude/settings.local.json and .serena/project.yml.

2025-08-16 - 3.0.75 - fix(deps)

Update dependencies, test tooling and test imports; enhance npm test script

- Bump multiple runtime dependencies to newer patch/minor versions (notable updates: @cloudflare/workers-types, @push.rocks/* packages such as smartchok, smartfile, smartlog, smartpath, smartrx, and others, @tsclass/tsclass, @types/express, lit).
- Upgrade dev tooling versions: @git.zone/tsbuild and @git.zone/tsbundle; update @git.zone/tstest to v2.3.4.
- Improve npm test script by adding --verbose, --logfile and increased --timeout.
- Fix test imports to use @git.zone/tstest/tapbundle in test/test.reload.ts and test/test.server.ts.

2025-04-12 - 3.0.74 - fix(commit-info)

chore: update commit metadata (no source code changes)

- Uncommitted diff shows no changes in source files; the commit updates internal commit info only.

2025-04-11 - 3.0.73 - fix(metadata)

Update repository URLs and metadata to reflect the new organization scope

- Changed gitscope from 'pushrocks' to 'api.global' in npmextra.json
- Updated repository URL, bugs URL, and homepage in package.json to use code.foss.global/api.global/typedserver

2025-04-11 - 3.0.72 - fix(project)

chore: no changes - commit metadata update

2025-04-11 - 3.0.71 - fix(serviceworker)

Improve error handling and logging in service worker backend and network manager; update multiple dependency versions and packageManager settings.

- Upgrade dependency versions in package.json (e.g. @cloudflare/workers-types, @push.rocks/smartfile, @push.rocks/smartpromise, @push.rocks/smartrequest, @tsclass/tsclass, and @types/express)
- Add packageManager field to package.json
- Enhance error handling in ServiceworkerBackend (using try/catch and detailed logging) during client reload, notification display, and alert message sending
- Improve network request handling by clearing timeouts and converting errors reliably in NetworkManager
- Wrap service worker install and activate event handlers with try/catch to log errors appropriately

2025-03-16 - 3.0.70 - fix(TypedServer)

Improve error handling in server startup and response buffering. Validate configuration for reload injections, wrap file watching and TypedSocket initialization in try/catch blocks, enhance client notification and stop procedures, and ensure proper Buffer conversion in the proxy handler.

- Add validation to throw error if reload script is enabled without a serve directory
- Wrap file watching and TypedSocket initialization in try/catch to prevent crashes during startup
- Update the reload function to safely notify clients and handle notification errors
- Enhance the stop procedure to aggregate cleanup tasks with error handling
- Ensure consistent conversion of response bodies to Buffer in HandlerProxy with fallback when undefined
- Include fallback hash generation in createServeDirHash for error resilience

2025-03-16 - 3.0.69 - fix(servertools)

Fix compression stream creation returns, handler proxy buffer conversion, and sitemap URL concatenation

- Return compression stream immediately in createCompressionStream for each case instead of using break statements
- Convert proxied response to a Buffer in handler proxy rather than throwing an error when it isn't a string
- Fix addUrls method in sitemap to correctly concatenate new URLs without duplicating existing entries

2025-02-07 - 3.0.68 - fix(cache-manager)

Simplify cache control headers in cache manager

- Removed unnecessary cache control headers while setting modern Cache-Control.

2025-02-06 - 3.0.67 - fix(serviceworker)

Enhance header security for cached resources in service worker

- Added Cross-Origin-Resource-Policy header management for service worker cached resources.

2025-02-06 - 3.0.66 - fix(serviceworker)

Improve error handling and logging in cache manager and update manager.

- Enhanced error handling and logging in cache management functions.
- Corrected network request handling in update manager.
- Added missing error handling for fetch events.

2025-02-04 - 3.0.65 - fix(readme)

Update documentation with advanced usage and examples

- Added section on advanced usage including service worker and edge worker setup
- Detailed integration examples for type-safe API requests and WebSocket communication
- Expanded configuration options and cache strategies

2025-02-04 - 3.0.64 - fix(serviceworker)

Improve cache handling and response header management in service worker.

- Addressed issue preventing caching of certain responses due to missing CORS headers.
- Added 'Vary: Origin' header to ensure proper response handling.
- Included 'Access-Control-Expose-Headers' for better CORS support.

2025-02-04 - 3.0.63 - fix(core)

Refactored caching strategy for service worker to improve compatibility and performance.

- Removed hard and soft caching distinctions.
- Simplified cache setup process.
- Improved browser caching control headers.

2025-02-04 - 3.0.62 - fix(Service Worker)

Refactor and clean up the cache logic in the Service Worker to improve maintainability and handle Safari-specific cache behavior.

- Refactored logic for determining cached domains, enhancing the readability and maintainability of the code.
- Improved handling of CORS settings in caching requests, notably bypassing caching for soft cached domains in Safari to avoid CORS issues.
- Enhanced error response creation for failed resource fetching, maintaining clarity on why and how certain resources were not fetched or cached.
- Revised the structure of the caching logic to ensure consistent behavior across all supported browsers.

2025-02-04 - 3.0.61 - fix(ServiceWorkerCacheManager)

Fixed caching mechanism to better support Safari's handling of soft-cached domains.

- Added logic to differentiate between hard and soft cached domains.
- Implemented special handling for soft cached domains on Safari by bypassing caching.
- Ensured appropriate CORS headers are present in cached responses.

- Improved error handling with informative 500 error responses.
- Optimized caching logic to prevent redundant caching and potential issues with locked streams on Safari.

2025-02-04 - 3.0.61 - fix(ServiceWorkerCacheManager)

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2025-02-04 - 3.0.60 - fix(cachemanager)

Improve cache management and error handling

- Updated comments for clarity and consistency.
- Enhanced error handling in `fetch` event listener.
- Optimized cache key management and cleanup process.
- Ensured CORS headers are set for cached responses.
- Improved logging for caching operations.

2025-02-03 - 3.0.59 - fix(serviceworker)

Fixed CORS and Cache Control handling for Service Worker

- Improved handling of CORS settings for external requests.
- Preserved important headers while excluding caching headers.
- Ensured the presence of CORS headers in cached responses.
- Adjusted Cache-Control headers to prevent browser caching but allow service worker caching.

2025-02-03 - 3.0.58 - fix(network-manager)

Refined network management logic for better offline handling.

- Improved logic to handle missing connections more gracefully.
- Added detailed online/offline connection status logging.
- Implemented a check for stale cache with a grace period for offline scenarios.
- Network requests now use optimized retries and timeouts.

2025-02-03 - 3.0.57 - fix(updateManager)

Refine cache management for service worker updates.

- Ensured cache is forcibly updated if older than defined maximum age.

- Implemented interval checks and forced updates for cache staleness.
- Updated version information and cache timestamps upon forced updates or validations.

2025-02-03 - 3.0.56 - fix(cachemanager)

Adjust cache control headers and fix redundant code

- Remove duplicate assetbroker URLs in the cache evaluation logic.
- Update cache control headers to improve caching behavior.
- Increase the timeout for fetch operations to improve compatibility.

2025-01-28 - 3.0.55 - fix(server)

Fix response content manipulation for HTML files with injectReload

- Moved fileString declaration inside HTML file handling block to prevent unnecessary string conversion for non-HTML files.
- Corrected responseContent assignment to ensure modified HTML strings are converted back to Buffer format.

2025-01-28 - 3.0.54 - fix(servertools)

Fixed an issue with compression results handling in HandlerStatic where content was always being written even if not compressed.

- Corrected the double writing of response in HandlerStatic.
- Ensured that file buffers are only conditionally written based on compression availability.

2024-12-26 - 3.0.53 - fix(infohtml)

Remove Sentry script and logo from HTML template

- Removed Sentry script from the HTML template.
- Removed Lossless GmbH logo and contact info.
- Updated footer link to point to foss.global.

2024-12-25 - 3.0.52 - fix(dependencies)

Bump package versions in dependencies and exports.

- Updated package dependencies to their latest versions.
- Added './infohtml' in package exports.

2024-08-27 - 3.0.51 - fix(core)

Update dependencies and fix service worker cache manager and task manager functionalities

- Updated dependencies in package.json to their latest versions
- Enhanced service worker cache manager to include additional scoped URLs
- Fixed task manager to start the task manager and added update task functionality
- Removed .gitlab-ci.yml from the repository as part of the cleanup

2024-05-25 - 3.0.43 to 3.0.50 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.43 to 3.0.50

2024-05-23 - 3.0.37 to 3.0.42 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.37 to 3.0.42

2024-05-17 - 3.0.37 - Core

Routine update and bug fix

- Updated core functionalities

2024-05-14 - 3.0.33 to 3.0.36 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.33 to 3.0.36

2024-05-13 - 3.0.31 to 3.0.32 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.31 to 3.0.32

2024-05-11 - 3.0.29 to 3.0.31 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.29 to 3.0.31

2024-04-19 - 3.0.27 to 3.0.28 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.27 to 3.0.28

2024-04-14 - 3.0.27 - Documentation

Updated Documentation

- Improved and updated documentation

2024-03-01 - 3.0.25 to 3.0.26 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.25 to 3.0.26

2024-02-21 - 3.0.20 to 3.0.24 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.20 to 3.0.24

2024-01-19 - 3.0.19 to 3.0.20 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.19 to 3.0.20

2024-01-09 - 3.0.14 to 3.0.18 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.14 to 3.0.18

2024-01-08 - 3.0.11 to 3.0.13 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.11 to 3.0.13

2024-01-07 - 3.0.9 to 3.0.10 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.9 to 3.0.10

2023-11-06 - 3.0.8 to 3.0.9 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.8 to 3.0.9

2023-10-23 - 3.0.6 to 3.0.7 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.6 to 3.0.7

2023-10-20 - 3.0.5 to 3.0.6 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.5 to 3.0.6

2023-09-21 - 3.0.4 to 3.0.5 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.4 to 3.0.5

2023-08-06 - 3.0.2 to 3.0.3 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.2 to 3.0.3

2023-08-03 - 3.0.1 to 3.0.0 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 3.0.1 to 3.0.0

2023-08-03 - 2.0.65 - Core

Breaking change in core update

- Introduced breaking changes updating core functionalities

2023-07-02 - 2.0.59 to 2.0.64 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 2.0.59 to 2.0.64

2023-07-01 - 2.0.54 to 2.0.58 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 2.0.54 to 2.0.58

2023-06-12 - 2.0.53 - Core

Routine update and bug fix

- Updated core functionalities

2023-04-10 - 2.0.52 to 2.0.53 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 2.0.52 to 2.0.53

2023-04-04 - 2.0.49 to 2.0.51 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 2.0.49 to 2.0.51

2023-03-31 - 2.0.45 to 2.0.48 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 2.0.45 to 2.0.48

2023-03-30 - 2.0.37 to 2.0.44 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 2.0.37 to 2.0.44

2023-03-29 - 2.0.33 to 2.0.36 - Core

Routine updates and bug fixes

- Updated core functionalities for better performance and stability in versions 2.0.33 to 2.0.36