# *webdlmon* and the Antelope Web Technology Stack

Antelope 5.14

Leslie Pajuelo

Jade Terra Technologies June, 2024 Trieste, Italy AUG



# History – Antelope and the Web

- 1998: USGS web events product, enhanced and connected to Antelope at Alaska Earthquake Center
- 2006: Antelope PHP Interface, with Rob Newman
- 2012: Peregrine: rtwebserver(1) and rtcache(1)
- 2019: FDSN Web Services via webservice\_fdsn(1), Rohan Ambli
- 2023: rtgunicorn(1), nginx built in to Antelope thirdparty code
- 2024: nginx plus npm, React, webdlmon



## The app

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### The app





### The Goal

By the end you will understand how **webdlmon**:

- gets data
- loads a config and how to modify
- Displays to users and how to modify the browser UI
- deploys



# **The Plan**

- 1. Web Architecture
- 2. Data Flow
- 3. In the Browser React
- 4. In Development NPM
- 5. Deployment





### Web Architecture /\$USER/rtsystems/rtexec.pf

Processes &	Tbl{
orbserver	orbserve
orb2orb	orb2orb
orb2ws	orb2ws -verb
rtgunicorn	rtgunicorn r
webdlmon	npm ——prefi
nginx	nginx -p ./





### **Web Architecture**





### Web Architecture - NGNIX /rtsystems/rtsystem\_webdlmon/pf/nginx.conf



### Data Flow - Web Sockets: orb2ws(1)

Broadcasts packets from *orbserver* to a single TCP connection

- Full-duplex
- Persistent connection

### orb2ws -verbose -port 8767 -select '.\*/pf/st' -rewindsec 300 \$0RB

- Rewind means that packets will be delivered from the previous 300 seconds



### Data Flow - Web Sockets: orb2ws(1)



File Views Windows				Ŧ			<u>8.8</u> 8-8- <u>8.9</u> 9-8- 8
dinâme	comtcompgp24 gp1 nr24 pm	p SLT ditncy	runtm tp	cme bufr nl24 np24 ni24	dr br24 bw24meme ade cals	s citncy icq cidrf m0-2	m3-5 temp volt amp gpssgps pli lat Ion
AZ_BSAP	Os Os O	05s 3d10h48m31s	3d10h47m19s 0.00	0 0 0	0 0k 60k 0	00s 100% -2us 20	46C 12.8V 76mA 3D L 33.260 -116.322
AZ_BZN	0s 0s 0	05s	359d10h21m00s 0.00	0 0 0	0 0k 0k		
AZ_CRY	Os Os O	05s 3d10h48m41s	3d10h47m25s 0.00	0 0 0	0 0k 59k 0	00s 100% 0us 14	20 29C 13.2V 58mA 3D L 33.565 -116.737
AZ_FRD	0s 0s 0	05s 3d10h48m31s	3d10h47m28s 0.00	0 0 0	0 0k 59k 0	00s 100% Ous <mark>-47</mark>	20 30C 13.3V 58mA 3D L 33.495 -116.602
AZ_KNW	Os Os O	05s 3d10h48m40s	3d10h47m22s 0.00	0 0 0	0 0k 59k 0	00s 100% 0us 93	20 27C 13.2V 62mA 3D L 33.714 -116.712
AZ_LVA2	0s 0s 0	05s 324d04h58m00s	324d04h56m51s 0.00	0 0 0	0 0k 0k		
AZ_MONP2	0s 0s 0	05s	359d10h21m00s 0.00	0 0 0	0 0k 0k		
AZ_PFO	Os Os O	05s 3d10h48m31s	3d10h47m13s 0.00	0 0 0	0 0k 59k 0	00s 100% 0us -12	20 29C 13.2V 60mA 3D L 33.612 -116.459
AZ_RDM	0s 0s 0	05s 3d10h48m31s	3d10h47m11s 0.00	0 0 0	0 0k 59k 0	00s 100% Ous 33	20 27C 13.3V 56mA 3D L 33.630 -116.848
AZ_RRSP	0s 0s 0	05s 3d10h50m04s	3d10h47m24s 0.00	0 0 0	0 0k 59k 0	03h07m00s 41% 1us -2	20 32C 12.8V 86mA ona If H 33.652 -116.739
AZ_SIO5	Os Os O	05s 03m18s	02m00s 0.00	0 0 0	24 81m 1.3m 0	00s 100% 1us -7	20 18C 10.2V 98mA 3D L 32.841 -117.250
AZ_SMER	0s 0s 0	05s 02s	5d13h21m47s 1.00	99% 0.0% 0 0 0 7	7.0k 77m 1.2m 0	00s 100% 0us <mark>-44</mark>	20 26C 11.8V 86mA 3D L 33.458 -117.171
AZ_SND	Os Os O	05s 3d10h48m41s	3d10h47m18s 0.00	0 0 0	0 0k 59k 0	00s 100% 0us -33	20 27C 13.3V 58mA 3D L 33.552 -116.613
AZ_TMSP	0s 0s 0	05s	359d10h21m00s 0.00	0 0 0	0 0k 0k		
AZ_TONN	0s 0s 0	05s 3d10h48m31s	3d10h47m13s 0.00	0 0 0	0 0k 59k 0	00s 100% 0us 20	48C 12.6V 70mA 3D L 33.144 -116.119
AZ_TRO	0s 0s 0	05s 3d10h48m31s	3d10h47m17s 0.00	0 0 0	0 0k 59k 0	00s 100% 1us -20	20 24C 12.3V 84mA 3D L 33.523 -116.425
AZ_USGCB	0s 0s 0	05s7200d15h53m01s	32d15h51m52s 0.00	0 0 0	0 0k 0k		
orb2orb:reader_main	rint	00s 12s	08m40s 0.00	3	3.3k		
orb2orb:writer_main	rint	00s 02s	08m40s 0.00	5	5.5k		

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### In the Browser - Chrome Dev Tools CSS

#### Select Fields

#### Webdlmon

diname	<u>comt</u>	comp	<u>gp24</u>	gp1	<u>nr24</u>	pmp	<u>SLT</u>	ditncy	runtm	tp	cme	bufr	<u>nl24</u>	<u>np24</u>	<u>ni24</u>	dr	<u>br24</u>	<u>bw24</u>	meme	ade	<u>cals</u>	<u>cltncy</u>	lcq	<u>cldrf</u>	<u>m0-</u>
AZ_BSAP			0s	00s	0.0		0	3d10h46m31s		0.00	-	-	0.0	0.0	0.0	0	0k	60k	0		-	0.000	100.000	-2	0
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AZ_CRY			0s	00s	0.0		0			0.00	-	-	0.0	0.0	0.0	0	0k	59k	0		-	0.000	100.000	0	0
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AZ_KNW			0s	00s	0.0		0			0.00	-	-	0.0	0.0	0.0	0	0k	59k	0		-	0.000	100.000	0	0
AZ_LVA2			0s	00s	0.0		0			0.00	-	-	0.0	0.0	0.0	0	0k	0k			-	-	-	-	0
AZ_MONP2			0s	00s	0.0		0	-		0.00	-	-	0.0	0.0	0.0	0	0k	0k			-	-	-	-	0
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### In the Browser - Chrome Dev Tools CSS

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AZ_KNW				0s	00s	0.0		0			0.00			0.0	0.0	0.0	25	Ok	60k	0
AZ_LVA2				0s	00s	0.0		0			0.00			0.0	0.0	0.0	0	Ok	0k	
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### In the Browser - Chrome Dev Tools Responsive





Challenges of the web

- Long running sites can have memory issues
- Repaints are expensive
- Interoperability

React is a framework which takes care of memory and minimizes re-paints



Every React component goes through the same lifecycle:

- A component mounts when it's added to the screen.
- A component updates when it receives new props or state, usually in response to an interaction.
- A component unmounts when it's removed from the screen.



- Effects occur when their data changes from the last rerender
- Data in effects is *reactive!*
- Data in event handlers is not.



function App() {
 return (
 <ErrorBoundary>
 <ErrorProvider>
 <ConfigProvider>
 <DlsDataProvider>
 <UlsDataProvider>
 </DlsDataProvider>
 </DlsDataProvider>
 </ConfigProvider>
 </ErrorProvider>
 </ErrorProvider>
 </ErrorBoundary>

export default App





}





- 1. Imports
- 2. Function definition
- 3. Getting or creating state, status, variables
- 4. useEffects
- 5. eventHandlers
- 6. Return JSX
  - a. Must return single HTML element





### In the Browser - React Dev Tools



### In Development - NPM & Vite

 $\checkmark$  dist

### $\lor$ assets

- JS index-rWZm0Rze.js
- # index-WSTCIm3E.css
- 🔄 earth.png
- index.html
- **t** vite.svg





### In Development - NPM & Vite

NPM is the package manager and task runner

Vite does many things, turns JSX into JavaScript

- HMR
- ES Module support
- Pre-bundles



**Deployment -** rtdeploy\_webapp(1)

- Copies necessary files into the rt-system directory
- Rtexec ultimate arbiter of whether webdlmon is running





### Thank You

support@brtt.com

