Summary Results Report
2019 Municipal General
November 5, 2019

OFFICIAL RESULTS

Kaysville City

STATISTICS

	TOTAL
Registered Voters - Total	17,136
Ballots Cast - Total	8,500
Voter Turnout - Total	49.60%

Kaysville City Council - 2 Year Term

Vote For 1

	TOTAL	VOTE %
ANDRE M LORTZ	4,075	50.76%
ZANE J. LARSEN	3,953	49.24%
Total Votes Cast	**8,028**	**100.00%**

Kaysville City Council - 4 Year Term

Vote For 3

	TOTAL	VOTE %
TAMARA (TAMI) TRAN	5,054	23.90%
JOHN SWAN ADAMS	4,108	19.42%
MIKE BLACKHAM	3,723	17.60%
BRETT TARBOX	3,348	15.83%
TIM ALLEN HODGES	2,613	12.36%
STROH L. DECAIRE	2,302	10.89%
Total Votes Cast	**21,148**	**100.00%**

Proposition 5

Vote For 1

	TOTAL	VOTE %
Yes	5,030	61.32%
No	3,173	38.68%
Total Votes Cast	**8,203**	**100.00%**

Precicnt	STATISTICS						Kaysville City Council-2 Year Term VOTE FOR 1		Kaysville City Council-4 Year Term VOTE FOR 3						Proposition 5 VOTE FOR 1	
	Registered Voters	Total Ballots Cast	Turnout	By Mail	Polls	Provisional	ANDRE M LORTZ	ZANE J. LARSEN	JOHN SWAN ADAMS	MIKE BLACKHAM	TIM ALLEN HODGES	STROH L. DECAIRE	BRETT TARBOX	TAMARA (TAMI) TRAN	Yes	No
KA01:I-C-	897	461	51.39%	434	27	0	221	224	237	210	146	146	188	267	299	154
KA02:I-C-	995	535	53.77%	514	19	2	221	292	278	250	213	129	192	279	308	203
KA03:I-C-	868	447	51.50%	428	18	1	186	240	258	188	180	119	134	230	287	146
KA04:I-C-	611	302	49.43%	286	12	4	129	159	170	166	76	92	90	172	178	116
KA05:I-C-	547	255	46.62%	246	9	0	105	138	168	107	89	46	68	151	131	108
KA05:I-N-	312	88	28.21%	84	4	0	28	58	47	38	28	25	27	57	45	37
KA06:I-C-	538	260	48.33%	255	5	0	113	131	142	127	78	85	75	151	151	98
KA06:I-N-	503	218	43.34%	203	15	0	113	93	118	108	53	71	68	120	136	76
KA07:I-C-	669	362	54.11%	345	17	0	118	228	232	137	194	69	119	182	230	120
KA08	418	209	50.00%	201	8	0	120	82	79	87	51	92	93	137	151	52
KA09:I-C-	43	22	51.16%	20	2	0	16	6	4	2	5	12	16	19	21	0
KA09:I-N-	608	312	51.32%	291	20	1	179	123	145	127	85	125	154	178	169	131
KA10:I-C-	921	520	56.46%	493	26	1	172	324	271	248	188	120	200	263	298	208
KA11:I-C-	949	483	50.90%	465	17	1	265	192	198	218	101	156	273	309	299	169
KA11:I-N-	0	0	0.00%	0	0	0	0	0	0	0	0	0	0	0	0	0
KA12:I-C-	562	262	46.62%	254	8	0	140	112	104	115	96	90	98	158	160	83
KA12:I-N-	73	31	42.47%	31	0	0	21	10	14	11	5	11	10	24	16	13
KA13:IBC-	718	336	46.80%	321	13	2	165	143	122	144	90	87	144	244	214	116
KA14:I-C-	217	112	51.61%	107	5	0	56	48	52	42	37	33	30	81	56	47
KA14:IBC-	495	238	48.08%	234	4	0	125	99	89	138	61	71	83	151	133	99
KA15:IBC-	686	309	45.04%	294	14	1	183	106	112	165	62	75	132	226	155	146
KA16:IBC-	839	364	43.38%	349	14	1	173	173	150	152	115	98	163	222	182	174
KA17:I-C-	953	533	55.93%	500	29	4	290	174	191	156	84	146	314	366	408	111
KA18:I-C-	627	304	48.48%	290	14	0	127	166	162	148	132	44	113	162	183	112
KA19:I-C-	824	393	47.69%	358	35	0	227	147	173	175	123	111	154	228	221	156
KA20:I-C-	725	428	59.03%	395	30	3	158	223	292	136	123	67	137	244	170	243
KA21	769	346	44.99%	332	14	0	260	81	129	126	104	94	148	211	206	124
KA22:I-C-	769	370	48.11%	356	14	0	164	181	171	202	94	88	125	222	223	131
Totals	**17,136**	**8,500**	**49.60%**	**8,086**	**393**	**21**	**4,075**	**3,953**	**4,108**	**3,723**	**2,613**	**2,302**	**3,348**	**5,054**	**5,030**	**3,173**

General Election November 5, 2019 Summary of By-Mail and Provisional Ballots Not Counted	Total ballots not counted	Already Voted	Already Affiliated	No Proof of Identiy	Not Valid Registration	No Proof of Residency	Power of Attorney	Signed by someone other than voter	Deceased	Moved out of County	No Signature	No Tabs	Signature did not match	Empty Evnelope	Not Timely
Kaysville By-Mail	83			3					1		10		53	1	15
Kaysville Provisional	5			1	1	3									
Total By-Mail Not Counted	83	0	0	3	0	0	0	0	1	0	10	0	53	1	15
Total Provisional Not Counted	5	0	0	1	1	3	0	0	0	0	0	0	0	0	0
Total	**88**	**0**	**0**	**4**	**1**	**3**	**0**	**0**	**1**	**0**	**10**	**0**	**53**	**1**	**15**

Election Webserver Incident 11/5/19

Incident: Shortly after 8pm on 11/5/2019 we were notified of our County website being unresponsive.

Response: We immediately contacted our network admin team and started gathering information. We found that the CPU usage on our webserver was hovering between 98% and 100%. The cause of the high usage was an IIS (Internet Information Services) Worker process that handles all of the incoming requests to our website. The webserver was rebooted in an attempt to reset all of the incoming website requests. Immediately after coming back online, the same process brought the CPU usage back to near 100%. Again, the server was taken offline and rebooted to add more memory in hopes to alleviate some of the stress off of the CPU. Once again, the CPU process returned to near 100%. At this same time, we were investigating the firewall to look at all of the incoming traffic and were able to rule out any type of denial of service attack. In order to gain access to the webserver and upload the election results, we decided to close all incoming connections to the webserver on the firewall. This dropped the CPU usage to minimal levels of 5%-10%. At this same time, a redirect of www.davisvotes.com was made to point to the Clerk-Auditor's Facebook page where election results were posted. Once both actions were complete, we opened outside access to our firewall once again. A short time after, we removed the redirect of www.davisvotes.com and pointed it again to our county webserver. CPU usage never reached the same debilitating levels.

*** See the attached Analytics Chart showing the timeline of these actions and the effects on CPU usage.

Post Incident Activity: In the hours that followed the incident, we continued gathering information.

- Our firewall logged 2,142 unique IP address visits from 8pm to 10:20pm. (This doesn't take into consideration for multiple attempts per each user/ IP address)
- Our webserver logged 53,687 requests from 7:45pm to 8:30pm.

We started performing stress tests on a non-production server with the same resources and settings as our production server. We performed many tests and found we were repeatedly able to recreate the same symptoms of the incident by simulating a high number of users to the election results page in a short amount of time.(250 users/visits per 10 seconds) Conversely, we found that other pages on the Clerk-Auditor election page were able to support the high volume of traffic in a short time span. We determined the election results page was able to handle a high number of users if the number of incoming users are spread out over a more extended period of time. (1000 users/visits per 10 minutes)

In further testing of the elections-results webpage, we found a tab offering the Prior Year results of the last 100 years of elections to be the primary cause of the resource strain on the CPU. When the content of the Prior Year results were removed, we again stress-tested the webserver and found it was easily able to handle 500 users/visits per 1 second. A significant turnaround in

performance. It was determined the file containing the last 100 years of election results was added in the March/April timeframe of 2019. In previous election years, the past 15 years of results were available on the election results page.

Future Procedural Changes: We have learned many things from this incident that we can use for future elections.

- We will break out the Prior Results data to its own stand-alone webpage.
- Prior to any future election, we will simulate stress tests to confirm our webserver will be able to accommodate expected and unexpected traffic loads. We will restrict uploads of any additional content in the window prior to the election and after stress testing.
- Additional measures and plans will be in place prior to the next election, but are not shared in this document due to security concerns.

Analytics chart showing CPU Usage time for webserver “WWW” on November 5, 2019 to current.

Figure a.

The CPU usage spikes to near 100% for the first time approximately 8:00pm.

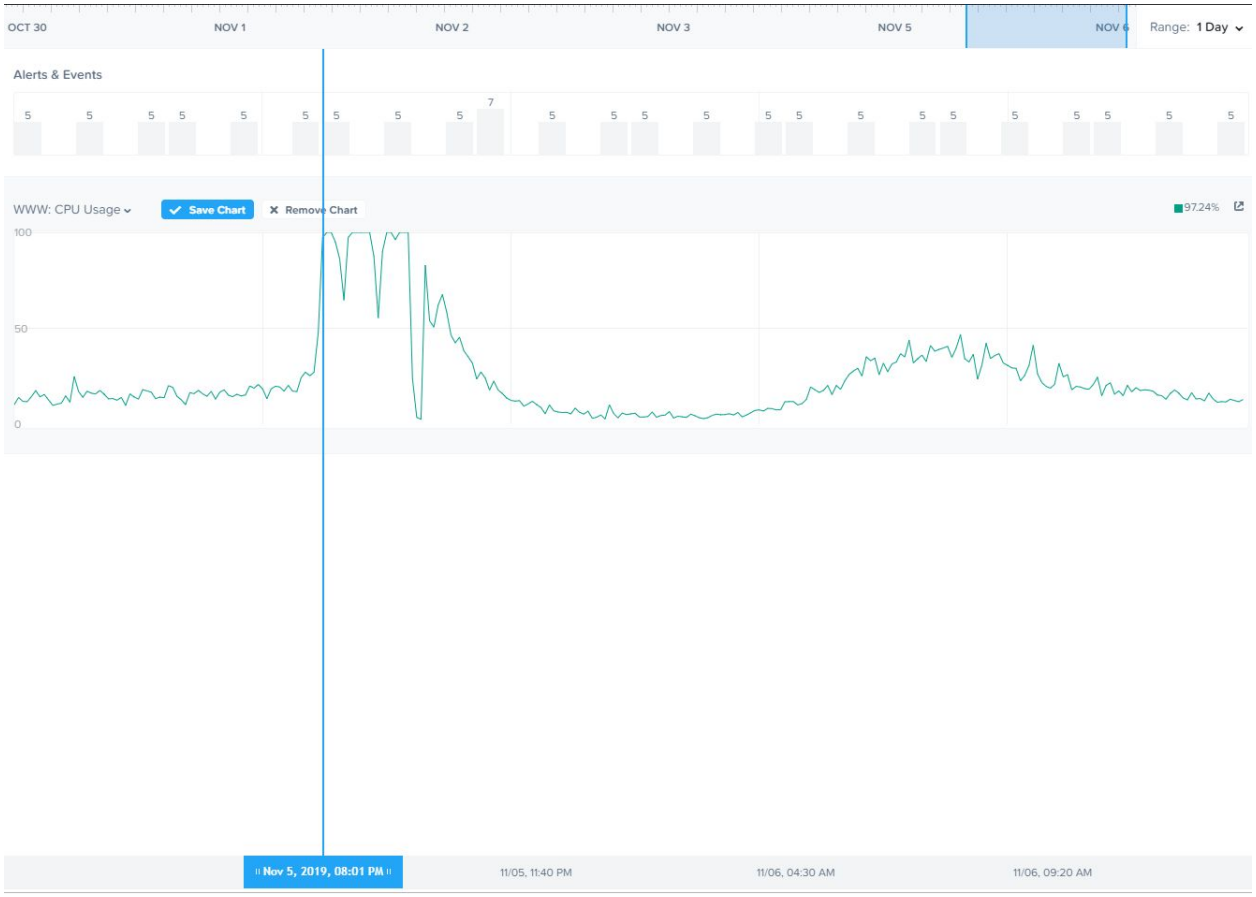


Figure b.

Webserver is rebooted at approx.8:26 in attempt to terminate IIS Worker Process that has maxed out CPU. Notice the small dip in usage that immediately spikes after the webserver returns online.

Figure c.
Webserver is again rebooted at approx 9:05pm. The purpose of this reboot is too add more memory in an attempt to alleviate the CPU pressure. Again, the usage spikes after coming online.

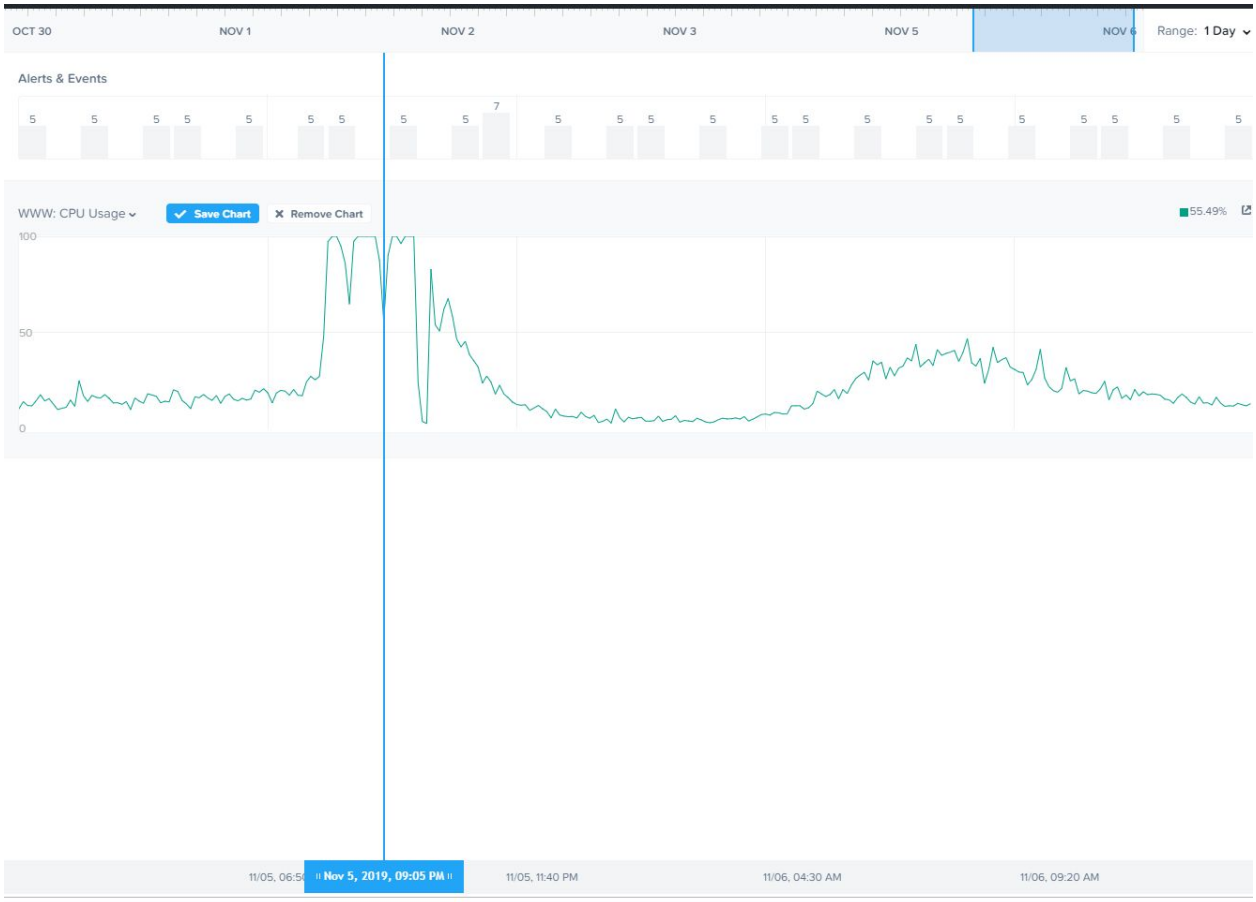


Figure d.
Approximately 9:50pm access to the webserver from outside the Davis County network has been closed on the firewall. CPU resource usage dropped below 5%. The webpage responded appropriately and allowed election results to be uploaded. During this time, a redirect of "www.davisvotes.com" was pointed to the clerk auditor's facebook page.

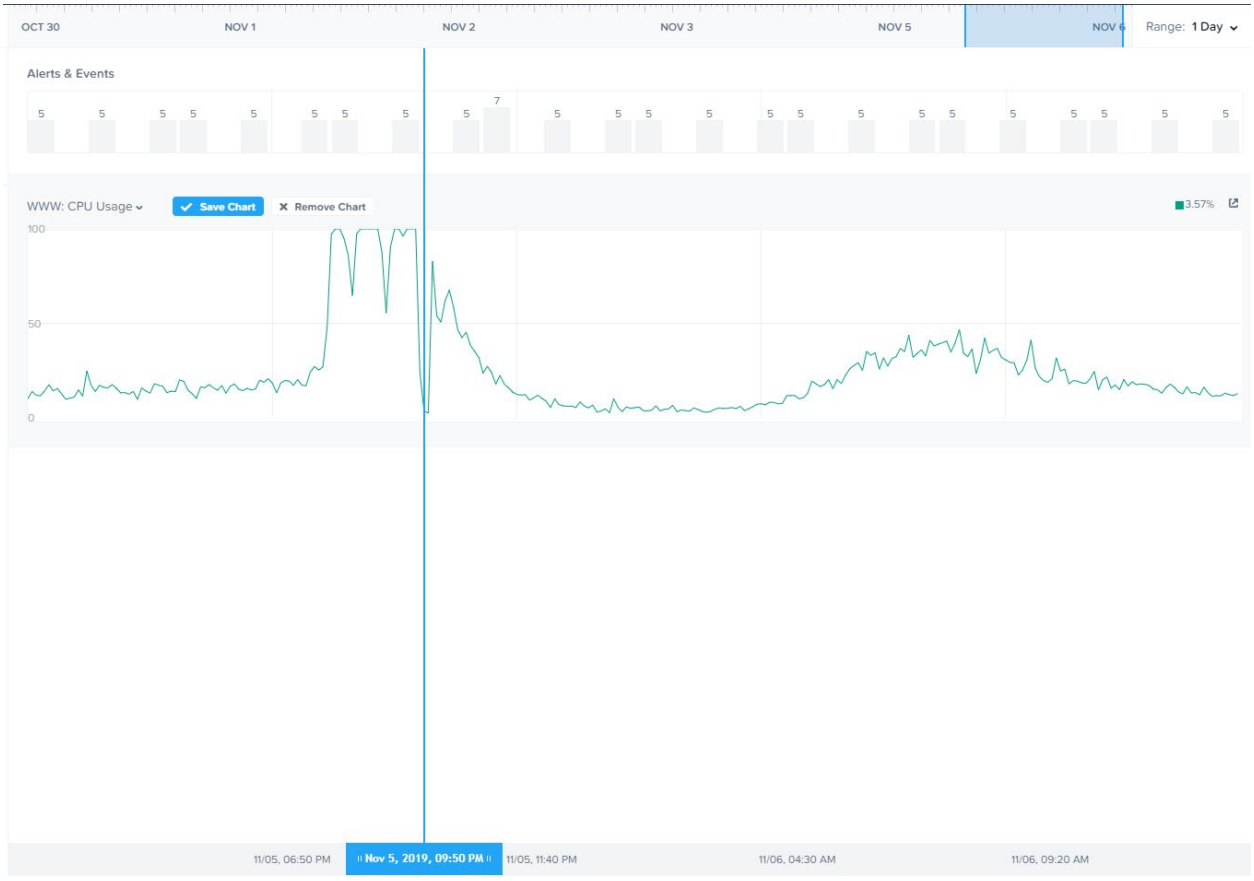
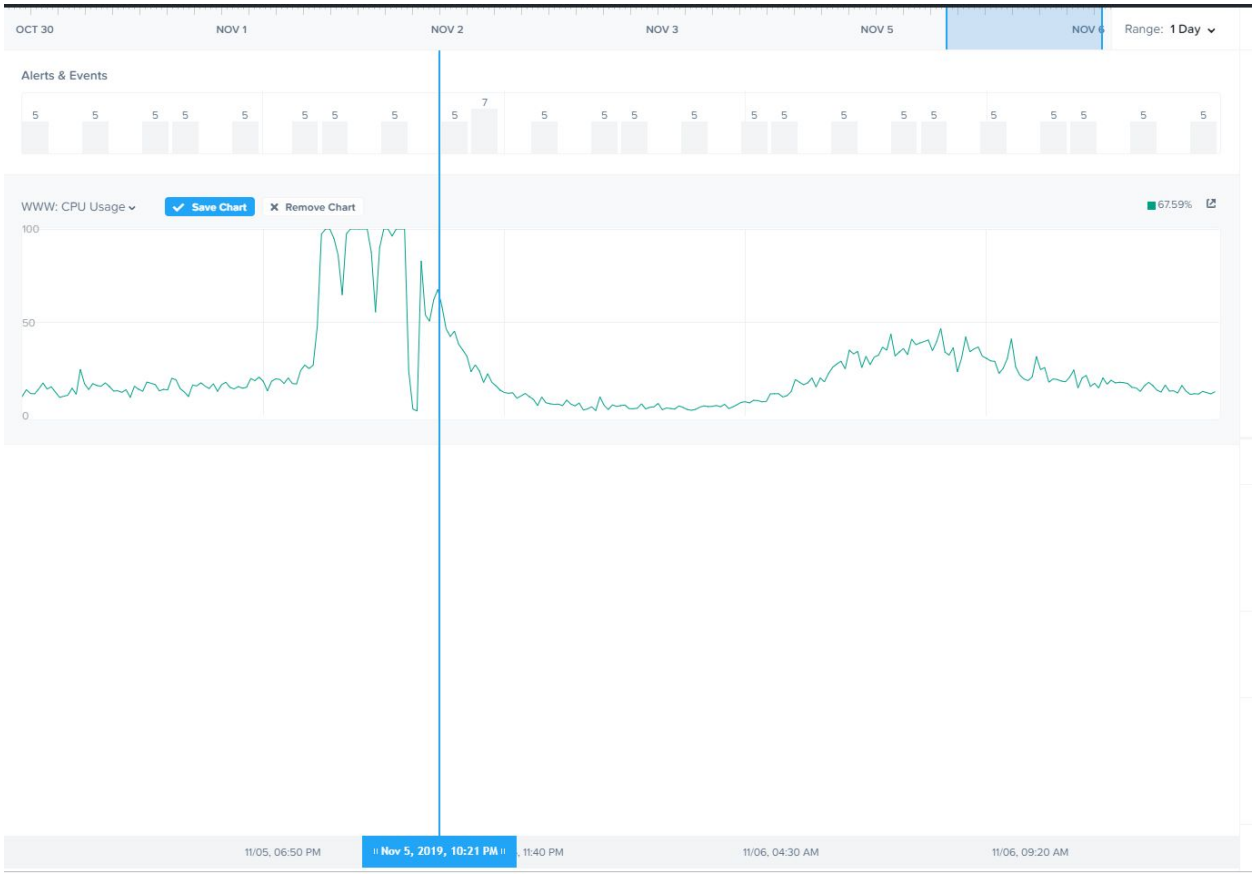


Figure e.
Approx. 10pm, outside access to the webserver has been restored. CPU usage climbs but never fully maxes out again.

Figure f.

Approx 10:20 pm the redirect of www.davisvotes.com to Facebook has been removed. Once again www.davisvotes.com is linking to the Webserver.


OCT 30
NOV 1
NOV 2
NOV 3
NOV 5
NOV 6
Range: 1 Day
Alerts & Events
WWW: CPU Usage
Save Chart
Remove Chart
67.59%
100
50
0
11/05, 06:50 PM
Nov 5, 2019, 10:21 PM
11:40 PM
11/06, 04:30 AM
11/06, 09:20 AM