



Business Partner
Software Solution Center

telefaks* application server for FreeSWITCH „Operator Panel“

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Overview

- Who we are
- telefaks* application server overview
- New Freeswitch Operator Panel (videos)
- What else is new since ClueCon 2009?



Who we are

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- Coming from Asterisk
- On Freeswitch since June 2008
- Transferred all our applications to Freeswitch since then
- Strong focus on
 - Integrating Freeswitch
 - Ruby and Rails Development
 - Encryption

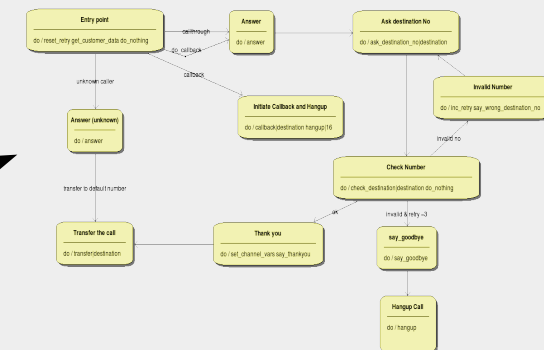


What is the Telefaks* app server? telefaks*de

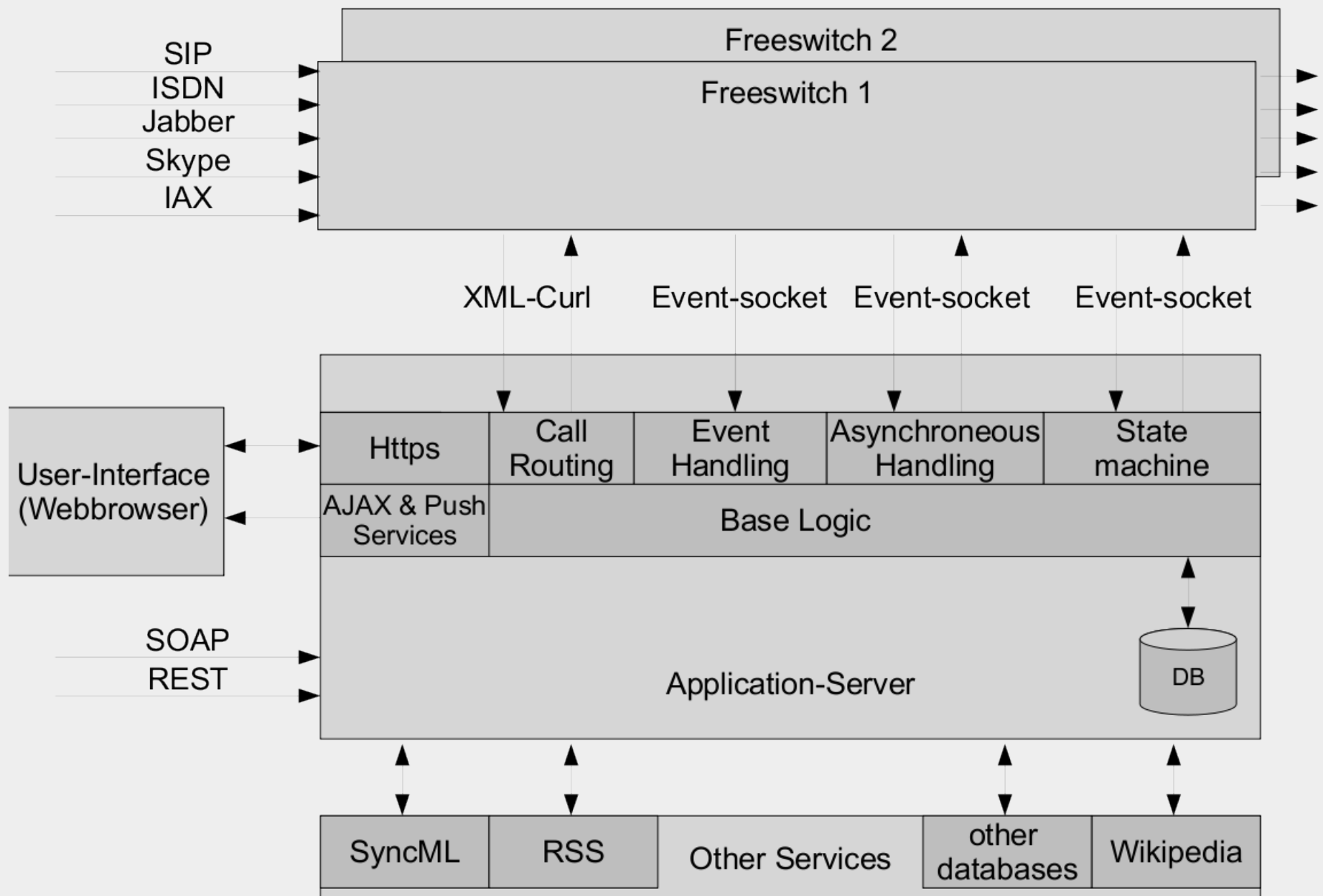
- System to manage a number of Freeswitch servers
- Administration GUI
- Can be used to manage large PBX, IVRs and switching networks
- State machine for IVR functionalities and callcenter support
- Asynchronous call handling
- Realtime interface with web browser (push services)
- Manages customer hierarchies and access control

What it covers

- Support of multiple Freeswitch servers
- PBX functionalities (is needed almost everywhere)
- Conferencing (setup and „live“ management)
- Call Queues
- Callback/dialthru
- IVR State machine with GUI
- Callcenter workflows inside a webbrowser
- TTS and ASR Support
- Encryption of calls (TLS/SRTP)
- Complex routing algorithms for larger networks
- Prepared for billing functionalities
- Custom applications



How it's designed



How our customers use it - Examples

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- Redundant SIP routing platform for city carriers
- Worldwide routing platform for call encryption and obfuscation
- PBX for larger companies (e.g. Airlines)
- IVR system for premium rate service providers
- IVR system for distribution of radio programs via phone for worldwide radio station
- Callback and callthrough platform





Operator Panel

Freeswitch Operator Panel - Overview

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- Shows status of active calls, conferences etc.
- Call initiation and diversion via drag & drop
- Show and modify status of extensions

Operator Panel [show menu](#)

Extensions												Internal numbers	
201 Peter Nokia	202 Peter Laptop	203 PolycomIP560	205 Markus Merit	206 Peter Compag	207 Peter Asus T	208 Peter Aastra	209 DECT Büro	210 Margit	211 Margit SIP	212 Margit SIP 2		270 Harald	271 Harald Lap
230 Peter ATA486	231 Susanne ATA4	232 Felix ATA486	233 Eva ATA486-4	241 Bornhorst Zo	242 HJB Twinkle	243 FB Bornhorst	250 David	251 Spautz Lapto	260 Alexander	261 Bornhorst A		512 Felix	513 Felix
280 Philips VP65	281 Philips VP65	300 Fax0	301 Fax1	302 Fax2	303 Fax3	304 Fax4	500 Giovanni	501 Giovanni Lap	510 FXS1	511 FXS2		512 FXS3	513 FXS3
514 FXS5	515 FXS6	516 FXS7	517 FXS8										

Incoming numbers

External (incoming) numbers

My number and my actions

MessageSrc	Message(both)	RecordStart
RecordStop	200	Voicemail
Spy		EmailNotify
SMSNotify	Forward	CLIR
Active	-	-
-	-	-

Operator's Area

My missed numbers [Clear](#)

015208890797 (Hans-Juerger)		

Operator's missed calls

My target numbers [Edit](#)

lookup	No lookup
06081688533 Telefaks	0171xxxxxx Peter H
0176xxxxxxx BornhorstHa	0549197520 BornhorstFes
0261123456 Müller	0251234567 Meyer
060331234565 Langs	0231165432 Jim
600 Skype_pst	

Operator's target numbers

Search Area

26824200 Sales	400 Central Tele	83533500 Sales	83533400 FIFO Queue t	83533401 Record a Wav	83533402 Say test	83533403 Speak Test	83533404 Execute a cu	83533405 Speak Wikip	83533100 Office Inter	83533101 Mobile Inter
26824201 CXO Mein50PI	401 Margit	83533501 Service1	83533406 Speak heise	83533407 RSS-feeds	83533408 Spy a user	83533409 Speak	83533410 Pizza Demo	83533411 Event Socket	83533103 Mobile 2	83533102 Office 2
83533200 Development	402 Test	26824500 Service2	83533412 Event Socket	83533413 Dialthru wit	83533414 Dial last nu	83533415 Intercom tes				
Conference	CallGroups	Queue/Fifo								

Special numbers

Trash

Masked numbers

Freeswitch Operator Panel - Background

- Focussing on supporting a local switchboard operator
- One operator panel instance for each operator's login account
- Operators can have full or limited view on the system based on user rights

- Worldwide
 - USA
 - EMEA
 - Germany
 - Frankfurt
 - Administration
 - Services
 - R&D
 - ASIA

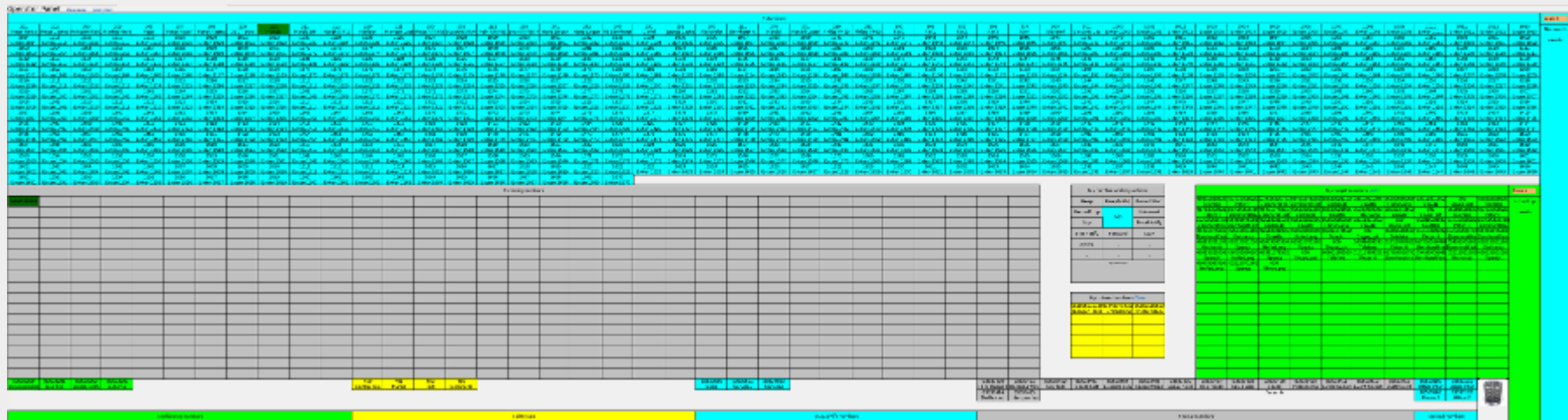
e.g. limited
view on
Frankfurt only

- Individual settings per operator (size of panel, target numbers, individual commands etc.)
- Just HTML and AJAX - runs in a web browser

Freeswitch Operator Panel - Large installations (1)

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- Example
 - Operator panel horizontally on a dual screen monitor (3840x1200)
 - More than 700 extensions





Videos

-
- A close-up, black and white photograph of a computer keyboard, focusing on the central keys including 'X', 'C', 'V', 'D', 'F', 'G', 'S', 'E', 'R', and 'T'. The keys are slightly raised and have a matte finish.

[illegible]

A black and white photograph of a large satellite dish antenna. The dish is made of a metal mesh and is mounted on a structure. It is pointed upwards towards the sky. The background is a clear sky with some light clouds.

-

A close-up photograph of a young woman with short, blonde hair. She is smiling broadly, showing her teeth, and holding a silver flip phone to her right ear with her right hand. The background is a plain, light color.[illegible]

A close-up photograph of a laptop keyboard with custom keycaps. The visible keys include: '1' with an infinity symbol (∞), '4' with 'phi' (ϕ), '7' with 'bars' ($\overline{}$), '5' with a square root symbol ($\sqrt{}$), '8' with a percent sign ($\%$), and a key with an asterisk ($*$) and a plus sign ($+$). The keycaps are light-colored with dark text and symbols.

-
- A close-up, black and white photograph of a computer keyboard, focusing on the central keys including 'X', 'C', 'V', 'D', 'F', 'G', 'S', 'E', 'R', and 'T'. The keys are slightly raised and have a matte finish.



Fax **Scanner**



The image shows two buttons on a device. The left button is yellow and features a black icon of a fax machine. The right button is orange and features a black icon of a scanner. Above the yellow button is the word 'Fax' in bold black text, and above the orange button is the word 'Scanner' in bold black text.



Freeswitch Operator Panel - Intercept a call

- Plot:
 - External number calls in
 - Phones of the related call group are ringing
 - Dragging a ringing phone to my phone number (200) intercepts the call
 - (dragging the incoming number field works also)

Video link:

006-0152-Intercept210--200.avi

Operator Panel show menu near values

Extensions									
201	202	203	204	205	206	207	208	209	210
Peter Nokia	Peter Laptop	PolycornP500	Markus Mert	Peter Compas	Peter Asma T	Peter Asma T	Peter Asma T	Peter Asma T	Peter Asma T
211	212	213	214	215	216	217	218	219	220
Peter AT&T	Susanne AT&T	Felix AT&T	Eva AT&T	HIS Zuber	HIS Twinkle	FB Bonmond	David	Sever Laps	Alexander
221	222	223	224	225	226	227	228	229	230
Philip VMS	Philip VMS	Fax0	Fax1	Fax2	Fax3	Fax4	Grover	Sever Laps	Sever Laps
FXS	FXS	FXS	FXS	FXS	FXS	FXS	FXS	FXS	FXS

Incoming numbers

Number	Name
200	200

My number and extensions

Extension	Name
200	200

My target numbers

Number	Name
200	200

My missed numbers

Number	Name
--------	------

Special numbers

Number	Name
200	200

Masked numbers

Number	Name
--------	------

Freeswitch Operator Panel - Forward a call to a searched extension

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- Plot:
 - External number calls in
 - Operator 200 takes the call
 - External number wishes to be forwarded to another person
 - As destination number is unknown, operator searches **extension** by name
 - Dragging the operator's phone number (200) to the result field transfers the call
 - Transfer to an external number searched in the **lookup table** works also

Video link:
008--0152-200-search-241-lookup.avi

Operator Panel

Extensions												Search		
201	202	203	204	205	206	207	208	209	210	211	212	220	221	241
Peter Nokia	Peter Laptop	Peter Laptop	Markus Herb	Peter Laptop	Peter Laptop	Peter Laptop	Peter Laptop	DECT Büro	Margit	Margit SIP	Margit SIP 2	Margit	Margit	PB Dursdorf
230	231	232	233	234	235	236	237	238	239	240	241	242	243	244
Peter ATA400	Susanne AT400	Felix ATA400	Eva ATA400	245	246	247	248	249	250	251	252	253	254	255
260	261	262	263	264	265	266	267	268	269	270	271	272	273	274
Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5	Philipp SIP5
280	281	282	283	284	285	286	287	288	289	290	291	292	293	294
295	296	297	298	299	300	301	302	303	304	305	306	307	308	309
310	311	312	313	314	315	316	317	318	319	320	321	322	323	324
325	326	327	328	329	330	331	332	333	334	335	336	337	338	339
340	341	342	343	344	345	346	347	348	349	350	351	352	353	354
355	356	357	358	359	360	361	362	363	364	365	366	367	368	369
370	371	372	373	374	375	376	377	378	379	380	381	382	383	384
385	386	387	388	389	390	391	392	393	394	395	396	397	398	399
400	401	402	403	404	405	406	407	408	409	410	411	412	413	414
415	416	417	418	419	420	421	422	423	424	425	426	427	428	429
430	431	432	433	434	435	436	437	438	439	440	441	442	443	444
445	446	447	448	449	450	451	452	453	454	455	456	457	458	459
460	461	462	463	464	465	466	467	468	469	470	471	472	473	474
475	476	477	478	479	480	481	482	483	484	485	486	487	488	489
490	491	492	493	494	495	496	497	498	499	500	501	502	503	504
505	506	507	508	509	510	511	512	513	514	515	516	517	518	519
520	521	522	523	524	525	526	527	528	529	530	531	532	533	534
535	536	537	538	539	540	541	542	543	544	545	546	547	548	549
550	551	552	553	554	555	556	557	558	559	560	561	562	563	564
565	566	567	568	569	570	571	572	573	574	575	576	577	578	579
580	581	582	583	584	585	586	587	588	589	590	591	592	593	594
595	596	597	598	599	600	601	602	603	604	605	606	607	608	609
610	611	612	613	614	615	616	617	618	619	620	621	622	623	624
625	626	627	628	629	630	631	632	633	634	635	636	637	638	639
640	641	642	643	644	645	646	647	648	649	650	651	652	653	654
655	656	657	658	659	660	661	662	663	664	665	666	667	668	669
670	671	672	673	674	675	676	677	678	679	680	681	682	683	684
685	686	687	688	689	690	691	692	693	694	695	696	697	698	699
700	701	702	703	704	705	706	707	708	709	710	711	712	713	714
715	716	717	718	719	720	721	722	723	724	725	726	727	728	729
730	731	732	733	734	735	736	737	738	739	740	741	742	743	744
745	746	747	748	749	750	751	752	753	754	755	756	757	758	759
760	761	762	763	764	765	766	767	768	769	770	771	772	773	774
775	776	777	778	779	780	781	782	783	784	785	786	787	788	789
790	791	792	793	794	795	796	797	798	799	800	801	802	803	804
805	806	807	808	809	810	811	812	813	814	815	816	817	818	819
820	821	822	823	824	825	826	827	828	829	830	831	832	833	834
835	836	837	838	839	840	841	842	843	844	845	846	847	848	849
850	851	852	853	854	855	856	857	858	859	860	861	862	863	864
865	866	867	868	869	870	871	872	873	874	875	876	877	878	879
880	881	882	883	884	885	886	887	888	889	890	891	892	893	894
895	896	897	898	899	900	901	902	903	904	905	906	907	908	909
910	911	912	913	914	915	916	917	918	919	920	921	922	923	924
925	926	927	928	929	930	931	932	933	934	935	936	937	938	939
940	941	942	943	944	945	946	947	948	949	950	951	952	953	954
955	956	957	958	959	960	961	962	963	964	965	966	967	968	969
970	971	972	973	974	975	976	977	978	979	980	981	982	983	984
985	986	987	988	989	990	991	992	993	994	995	996	997	998	999
1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014
1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029
1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044
1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059
1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074
1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089
1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104
1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119
1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134
1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149
1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164
1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179
1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194
1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209
1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224
1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239
1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254
1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269
1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284
1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299
1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314
1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329
1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344
1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359
1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374
1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389
1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404
1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419
1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434
1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449
1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464
1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479
1480	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494
1495	1496	1497	1498	1499	1500	1501	1502	1503	1504	1505	1506	1507	1508	1509
1510	1511	1512	1513	1514	1515	1516	1517	1518	1519	1520	1521	1522	1523	1524
1525	1526	1527	1528	1529	1530	1531	1532	1533	1534	1535	1536	1537	1538	1539
1540	1541	1542	1543	1544	1545	1546	1547	1548	1549	1550	1551	1552	1553	1554
1555	1556	1557	1558	1559	1560	1561	1562	1563	1564	1565	1566	1567	1568	1569
1570	1571	1572												

Freeswitch Operator Panel - Show call duration

- Showing call duration can be switched on or off
- Plot:
 - Operator's number 200 is dropped to 208
 - Call is connected
 - Both extensions show their individual call duration

Video link:

009--200-208-call-duration.avi

Extensions				
207 er Asus T	208 Peter Aastra	209 DECT Büro	210 Margit	211 Margit
242 Bornhorst Tw	243 FB Bornhorst	250 David	251 Spautz Lapto	252 Alex
303 Fax3	304 Fax4	500 Giovanni	501 Giovanni Lap	502 FX

My number and my actions		
MessageSrc	Message(both)	RecordStart
RecordStop	00:05 200	Voicemail
Spy		EmailNotify
SMSNotify	Forward	CLIR

Freeswitch Operator Panel - Conference and call groups

- Plot:
 - Operator's number 200 is dragged to the conference (conference initiated, 1 member)
 - Conference shows conference duration
 - Call group 403 is dragged to the conference (add another 3 members)
 - Show 'conference members' in info field by drag & drop
 - 208 dragged to the trash
 - Show 'conference members' in info field by drag & drop
 - Conference is dragged to the trash (conference ends)

Video link:
010--conference-call-groups.avi

Operator Panel

Extensions									
200	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

External numbers									
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400

My number and my actions									
200	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

My missed numbers									
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400

Call Groups									
401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500

Special numbers									
501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600

Missed numbers									
601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700

What else is new since ClueCon 2009 (1)

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- Performance
 - Built-in load balancer for managing freeswitch **clusters**
- New PBX features
 - **Call Groups** (multiple level hunt groups with „shuffle“, „oldest destination“, „recursion“, individual ring time etc.)
 - **new VM handling** („on“, „off“, „time based“, „absent message“, „TTS absent messages“)
 - **Email and SMS notifications** on missed calls
 - **lookup** functionalities to CRM database + city/country lookup as fallback
 - **white/blacklist** per Directory entry - can override global blacklist
 - **Early media** messages per endpoint
 - Global short numbers
 - **Intercom** for large groups

What else is new since ClueCon 2009 (2)

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- Call routing enhancements
 - **ENUM** handling inside application server
 - more sofia **profiles** for better NAT and VPN handling
 - many more fields for identifying call scenarios + individual routing flags
 - more complex rewriting of destination numbers
 - 3 stage **blacklists** / whitelist
 - global (inbound,outbound, both)
 - exchange access profile (e.g. international, domestic, local)
 - individual number ranges per extension
 - Click-to-dial, TTS notifications via http requests



What else is new since ClueCon 2009 (3)

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- Phone management (currently Snom, Polycom in preparation)
 - auto-**provisioning** of phones via DHCP
 - send SIP events to registered phones (e.g. „reboot“)
- **Skype** integration with inbound and outbound name/number mapping
- Inbound/outbound fax (T.30, T.38) with **Callweaver**
- System features
 - **Mailing-System**
 - **SMS-System**
 - Scheduled and periodic **job management**



Thank you!

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