

Gateway 2.0

Kenneth Evans

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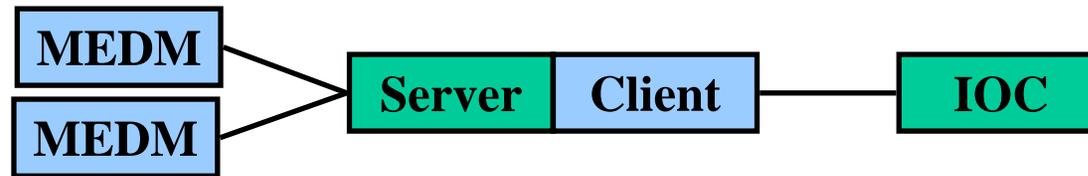
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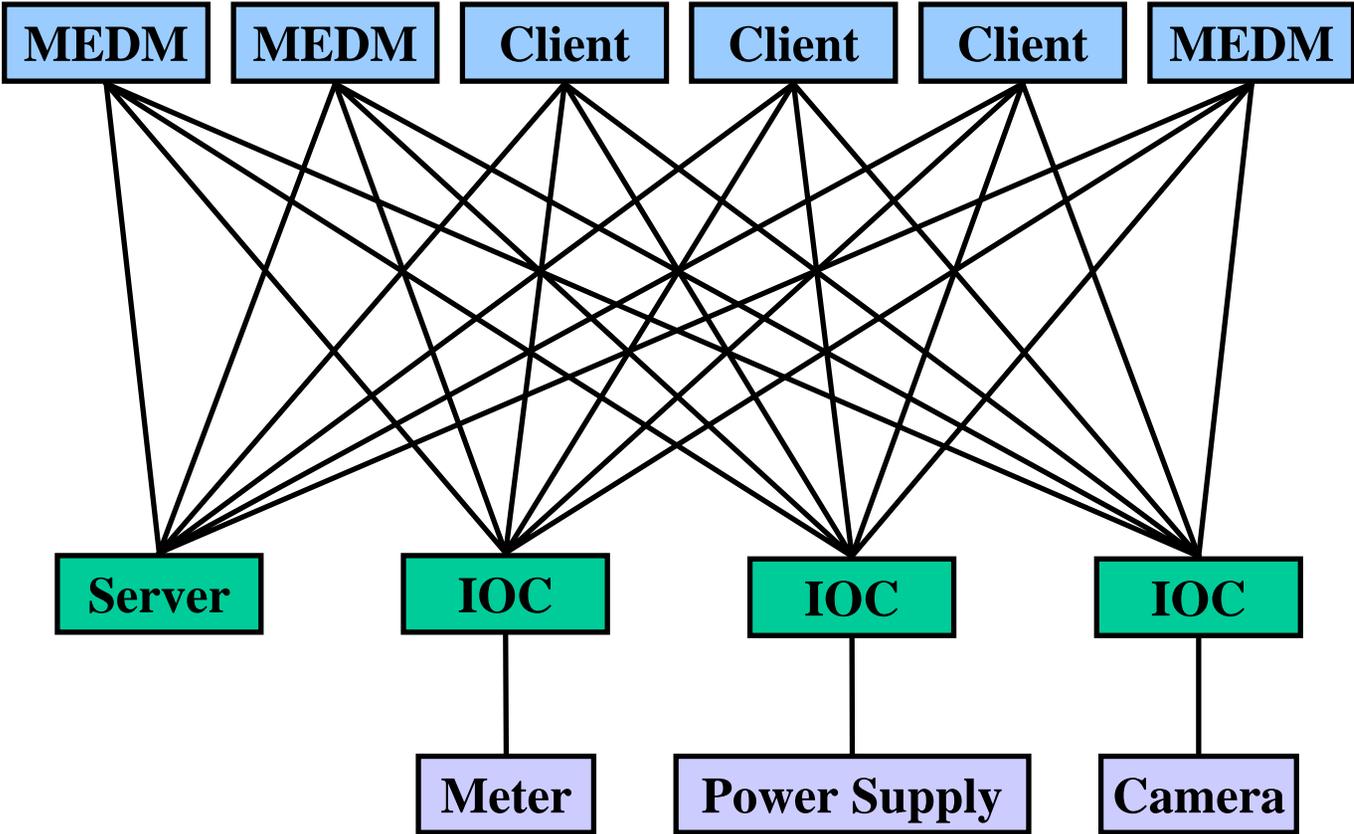
What is the Gateway ?

- **Both a Channel Access server and a Channel Access client**
 - Clients such as MEDM connect to the server side
 - Client side connects to remote servers such as IOCs

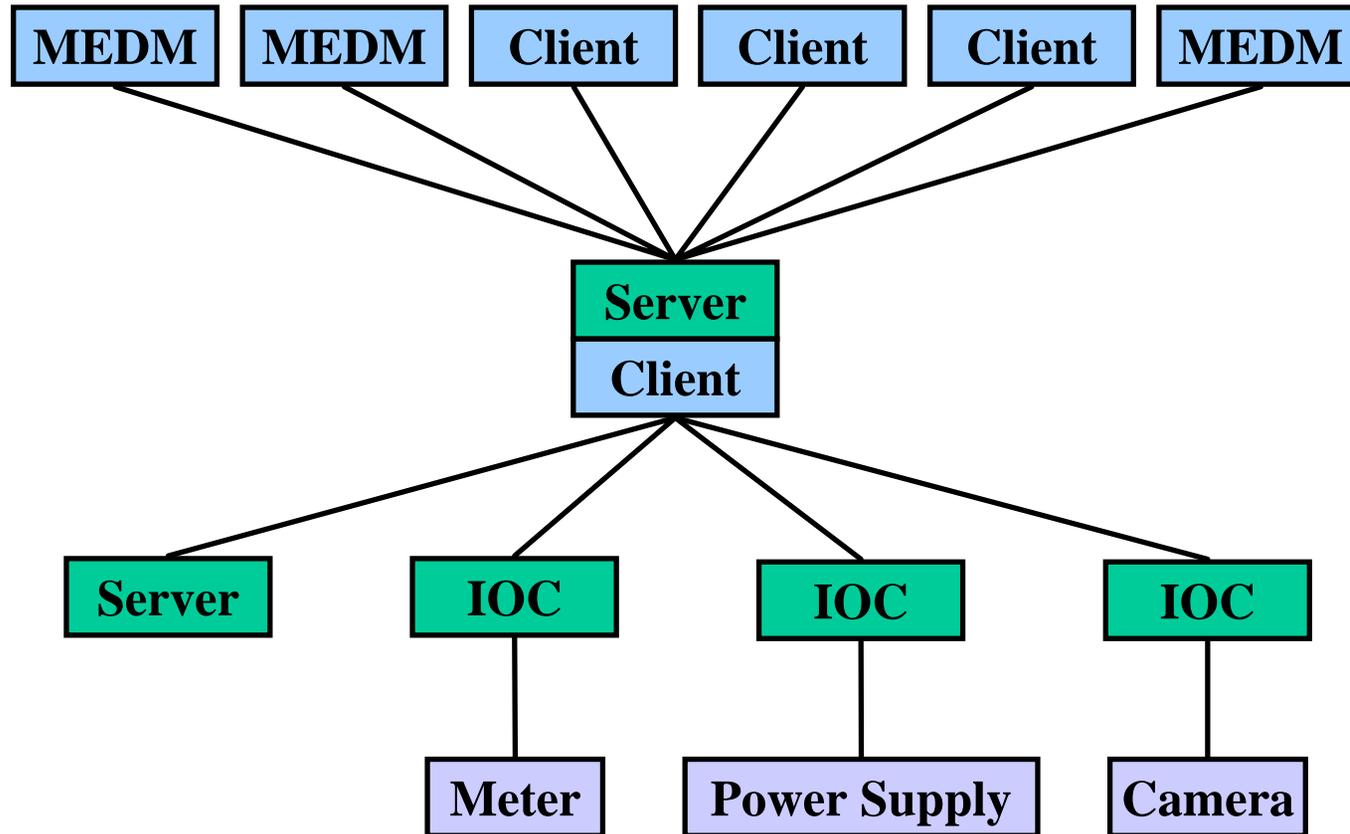


- **Allows many clients to access a process variable while making only one connection to the remote server**
 - Reduces the load on critical IOCs or other servers
- **Provides access from one subnet to another**
 - For example, from an office subnet to a machine subnet
- **Provides extensive additional access security**
 - For example, only read access from offices
- **Can provide aliases for process variable names**

EPICS Overview



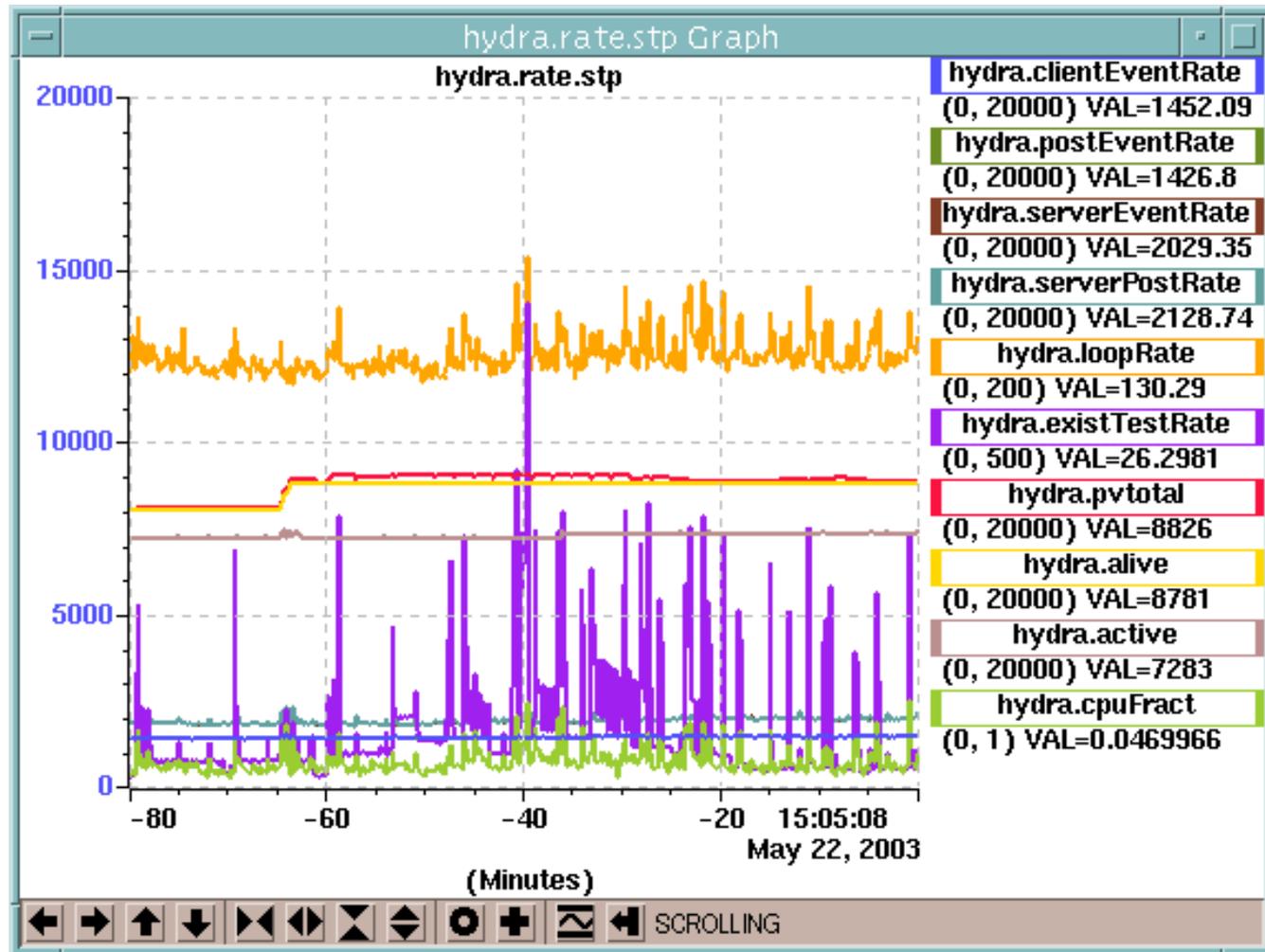
Gateway



New Features in Gateway 2.0

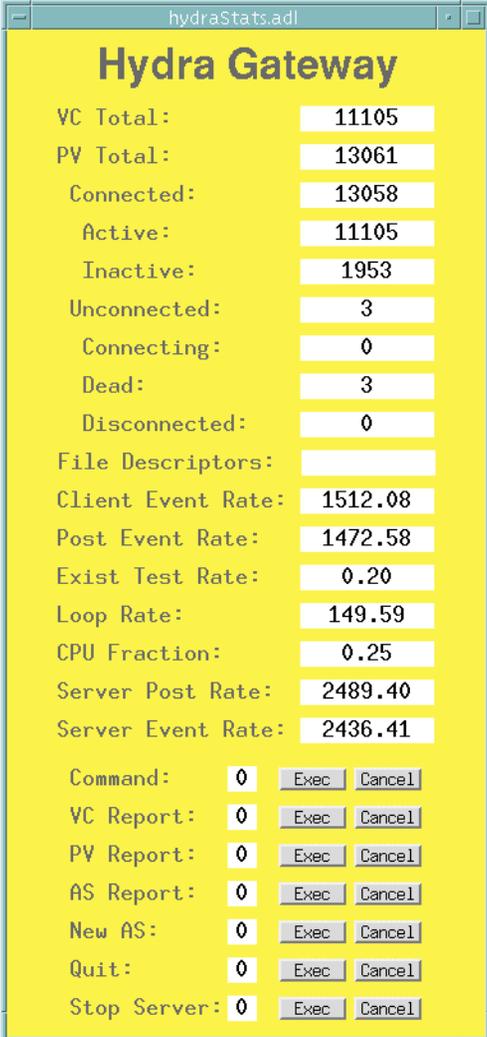
- **Does not require a specially modified version of base**
 - Does require 3.14 base
 - Needs 3.14.5 (preferably 3.14.6) or later to work right
- **Significant performance improvement**
 - 5 - 10 times less CPU usage
- **Very stable**
- **Runs on Solaris, Linux, and Windows**
- **Extensive diagnostics via internal process variables**
- **Users Manual**
- **Put logging**
- **Other new features and bug fixes**
 - Substantially more stable and powerful than Gateway 1.3

Extensive internal diagnostics via internal PVs



Can be monitored and controlled from MEDM

- There are monitor process variables that give the internal state
- There are control process variables that allow starting and stopping it
- There are process variables that cause reports to be generated
- There is a process variable that rereads the access security without restarting it
- It can be started via an MEDM Shell Command attached to a script (not shown)



The screenshot shows a window titled "hydraStats.adl" with a yellow background. The title bar includes standard window controls. The main content is titled "Hydra Gateway" and displays various statistics and control options. The statistics are listed in a table-like format with labels on the left and values in white boxes on the right. Below the statistics, there are several control options, each with a numeric value and two buttons labeled "Exec" and "Cancel".

Label	Value
VC Total:	11105
PV Total:	13061
Connected:	13058
Active:	11105
Inactive:	1953
Unconnected:	3
Connecting:	0
Dead:	3
Disconnected:	0
File Descriptors:	
Client Event Rate:	1512.08
Post Event Rate:	1472.58
Exist Test Rate:	0.20
Loop Rate:	149.59
CPU Fraction:	0.25
Server Post Rate:	2489.40
Server Event Rate:	2436.41

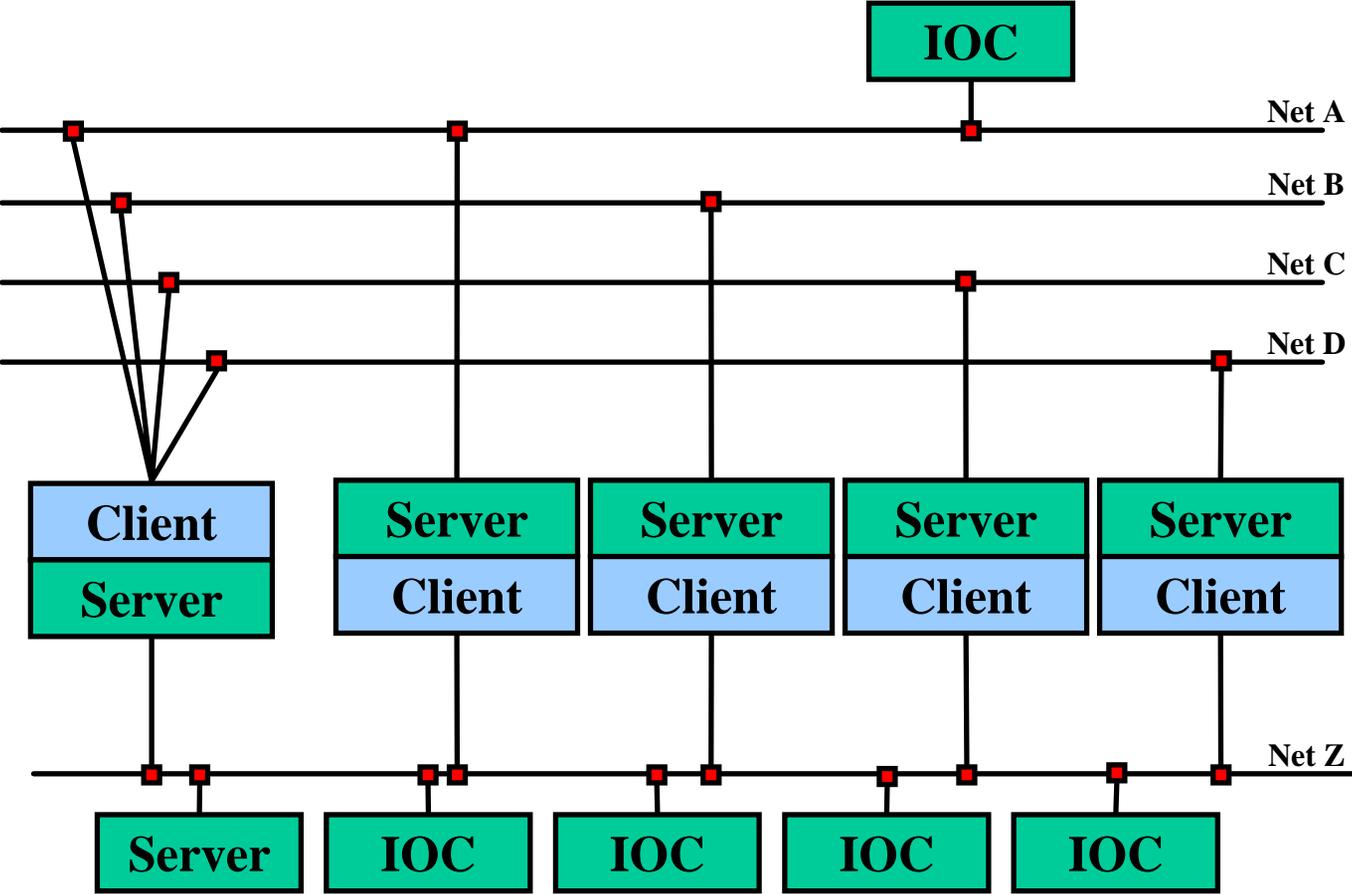
Command:	0	Exec	Cancel
VC Report:	0	Exec	Cancel
PV Report:	0	Exec	Cancel
AS Report:	0	Exec	Cancel
New AS:	0	Exec	Cancel
Quit:	0	Exec	Cancel
Stop Server:	0	Exec	Cancel

The APS Uses Gateways Extensively

- **2 main Gateways to provide access to offices and floor coordinators**
- **29 Remote Gateways that provide access for experimental teams to their own systems and to the main control system**
- **9 Reverse Gateways to provide access to the internal process variables of the remote Gateways**
- **1 Alias Gateway to implement process variable name changes until the new names are completely installed**
- **Special purpose Gateways as for the Video Server which is not allowed on the main subnet**

- **These numbers have been increasing**

Example Topology: Reverse Gateway



MEDM Status Screen for APS Gateways

GatewayOverview.adl

Statistics For All PV Gateways

Sector:	Alive:	Active:	Inactive:	Dead:	Total VC:	PV:	Client Rate:	Post Rate:	Exist Rate:	Loop Rate:	CPU Load:	Server Post:	Event:	Gateway:
1	11	11			11	11	2,00	2,00	0,00	56,88	0,00	2,70	2,70	
2	126	126			126	129	18,08	18,08	17,38	62,83	0,01	271,51	271,51	431
3	20	20			20	20	3,30	3,30	0,00	57,30	0,00	7,30	7,30	
4	63	63			63	63	15,78	15,78	0,00	61,04	0,00	20,38	20,38	
5	7	7			7	7	2,00	0,00	0,00	54,90	0,00	0,70	0,70	
6	12	12			12	12	5,59	3,80	0,00	58,24	0,00	23,48	23,48	432
7	31	31			31	31	19,18	11,19	284,90	77,42	0,02	105,89	105,89	
8	0	0			0	0	0,00	0,00	0,00	53,65	0,00	0,70	0,70	
9	6	6			6	8	2,00	2,00	69,13	60,44	0,01	28,67	28,67	
10	0	0			0	0	0,00	0,00	0,00	54,05	0,00	0,70	0,70	
11	102	94			94	102	19,58	0,00	0,00	54,74	0,00	0,70	0,70	433
12	65	61			57	65	16,28	2,00	76,72	59,94	0,00	2,70	2,70	
13	26	26			26	26	7,79	7,79	0,00	57,84	0,00	16,48	16,48	
14	179	98			93	179	18,18	18,18	23,98	62,64	0,00	18,88	18,88	434
15	22	22			22	22	15,38	15,38	0,00	60,84	0,00	16,08	16,08	434
16	8	8			8	8	0,00	0,00	0,00	53,68	0,00	0,70	0,70	
17	1	1			1	1	0,00	0,00	0,00	55,19	0,00	0,70	0,70	
18	1	1			1	1	0,00	0,00	0,00	54,38	0,00	0,70	0,70	
19	10	8			8	12	2,80	2,80	44,76	58,44	0,00	7,49	7,49	435
20	10	10			10	10	0,00	0,00	0,00	54,60	0,00	0,70	0,70	
21														
22	1	1			1	1	0,00	0,00	0,00	53,65	0,00	0,70	0,70	436
23	0	0			0	0	0,00	0,00	0,00	53,76	0,00	0,70	0,70	
24														
31	37	37			37	37	10,50	10,50	0,00	61,00	0,00	21,70	21,70	
32	30	30			30	30	3,00	3,00	0,00	57,04	0,00	3,70	3,70	438
33 & 34	205	19			19	205	11,39	11,39	32,37	60,74	0,00	140,95	140,95	
	12110	8272			8272	12155	1295,67	1295,67	130,89	135,99	0,05	1884,71	1884,71	Hydra
														Hydra04
														Rhea
	44	44			44	44	2,80	2,80	103,90	67,84	0,01	4,00	4,00	r431
	44	44			44	44	2,80	2,80	160,87	69,15	0,00	4,00	4,00	r432
	44	44			44	44	2,80	2,80	201,77	71,09	0,02	4,00	4,00	r433
	44	44			44	44	2,80	2,80	351,55	75,72	0,00	4,00	4,00	r434
	44	44			44	44	2,80	2,80	166,84	71,43	0,00	4,00	4,00	r435
	22	22			22	22	1,40	1,40	181,60	69,10	0,00	2,40	2,40	r436
	33	33			33	33	2,10	2,10	274,70	72,40	0,00	3,20	3,20	r438

MEDM Control Screen for APS Gateways

Sector:	Generate, View, Edit Reports				PV Gateway		PV List		Putlog View	Exist Rate:	Alive:	Active:	Machine Name:
	VC	PV	AS	Security Edit Load	Start	Stop	Edit/View	View					
1	VC Rept.	PV Rept.	AS Rept.	Load		Stop			9.60	61	61		
2	VC Rept.	PV Rept.	AS Rept.	Load		Stop			76.80	156	156	gateway431	
3	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	72	72		
4	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	62	61		
5	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	5	5		
6	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	11	11	gateway432	
7	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	26	26		
8-BM	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	8	8		
9	VC Rept.	PV Rept.	AS Rept.	Load		Stop			61.00	33	33		
10	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	0	0	gateway433	
11	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	195	195		
12	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	133	110		
13	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	45	31		
14	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	110	110	gateway434	
15	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	32	32		
16	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	11	11		
17	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	7	7		
18	VC Rept.	PV Rept.	AS Rept.	Load		Stop			11.70	1	1	gateway435	
19	VC Rept.	PV Rept.	AS Rept.	Load		Stop			39.99	14	10		
20	VC Rept.	PV Rept.	AS Rept.	Load		Stop			7.00	13	13		
21	VC Rept.	PV Rept.	AS Rept.	Load		Stop							
22	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.20	3	0		
23	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.20	0	0	gateway436	
24	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.20	0	0		
8-ID	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.20		11	gateway437	
31	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	28	28		
32	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.00	0	0	gateway438	
33 & 34	VC Rept.	PV Rept.	AS Rept.	Load		Stop			0.40	114	4		
Hydra	VC Rept.	PV Rept.	AS Rept.	Load		Stop			82.02	16290	13475	Hydra	
Rhea	VC Rept.	PV Rept.	AS Rept.	Load		Stop			673.79	2472	2358	Rhea	
r431	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1699.50	72	72	gateway431	
r432	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1704.47	80	72	gateway432	
r433	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1198.38	72	72	gateway433	
r434	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1704.52	72	72	gateway434	
r435	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1495.79	72	72	gateway435	
r436	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1142.72	50	50	gateway436	
r437	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1239.79	8	8	gateway437	
r438	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1396.32	54	54	gateway438	
rct.lapps	VC Rept.	PV Rept.	AS Rept.	Load		Stop			1694.09	27	21	ct.lapps	

Acknowledgements and References

- **Acknowledgements**
 - Originally written by Jim Kowalski in 1996
 - Contributions by Janet Anderson and Ralph Lange
 - Extensive involvement by Jeff Hill from the beginning
- **Reference Manual**
 - <http://www.aps.anl.gov/asd/controls/epics/EpicsDocumentation/ExtensionsManuals/Gateway/Gateway.html>