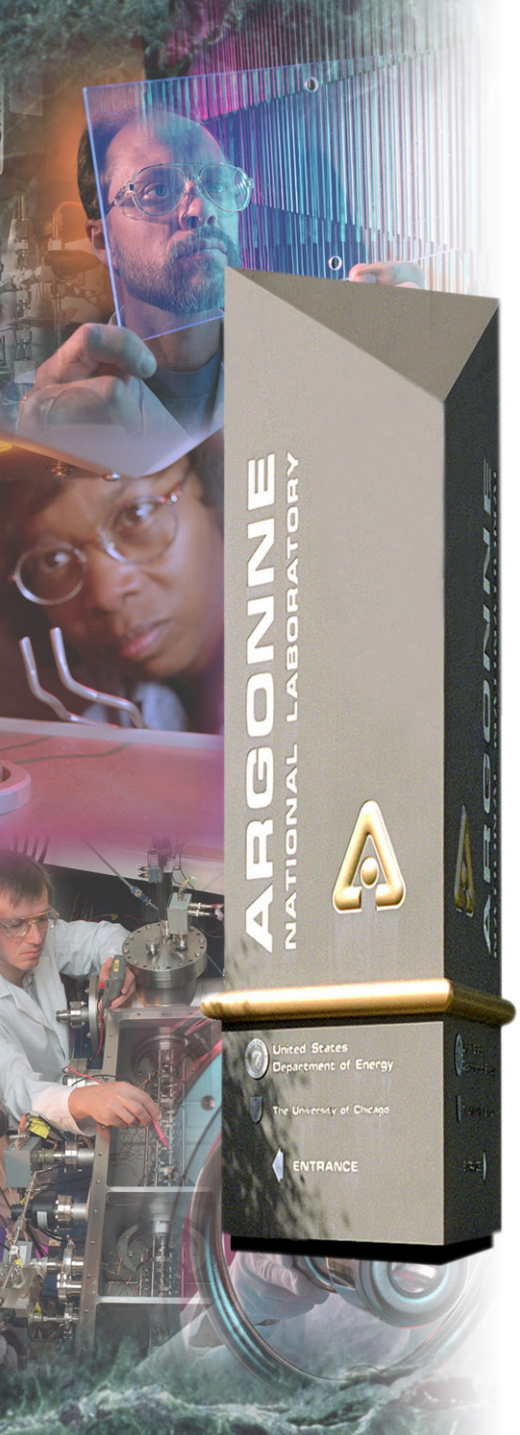

Gateway 2.0

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Argonne National Laboratory

Office of Science
U.S. Department of Energy

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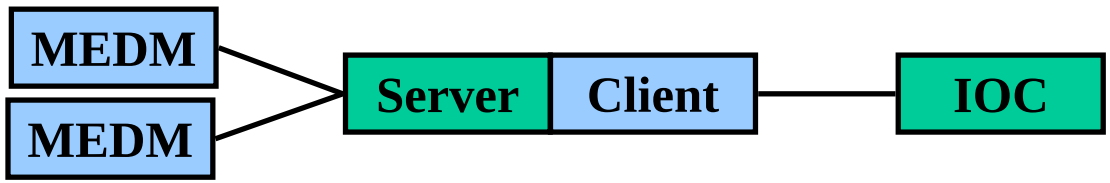
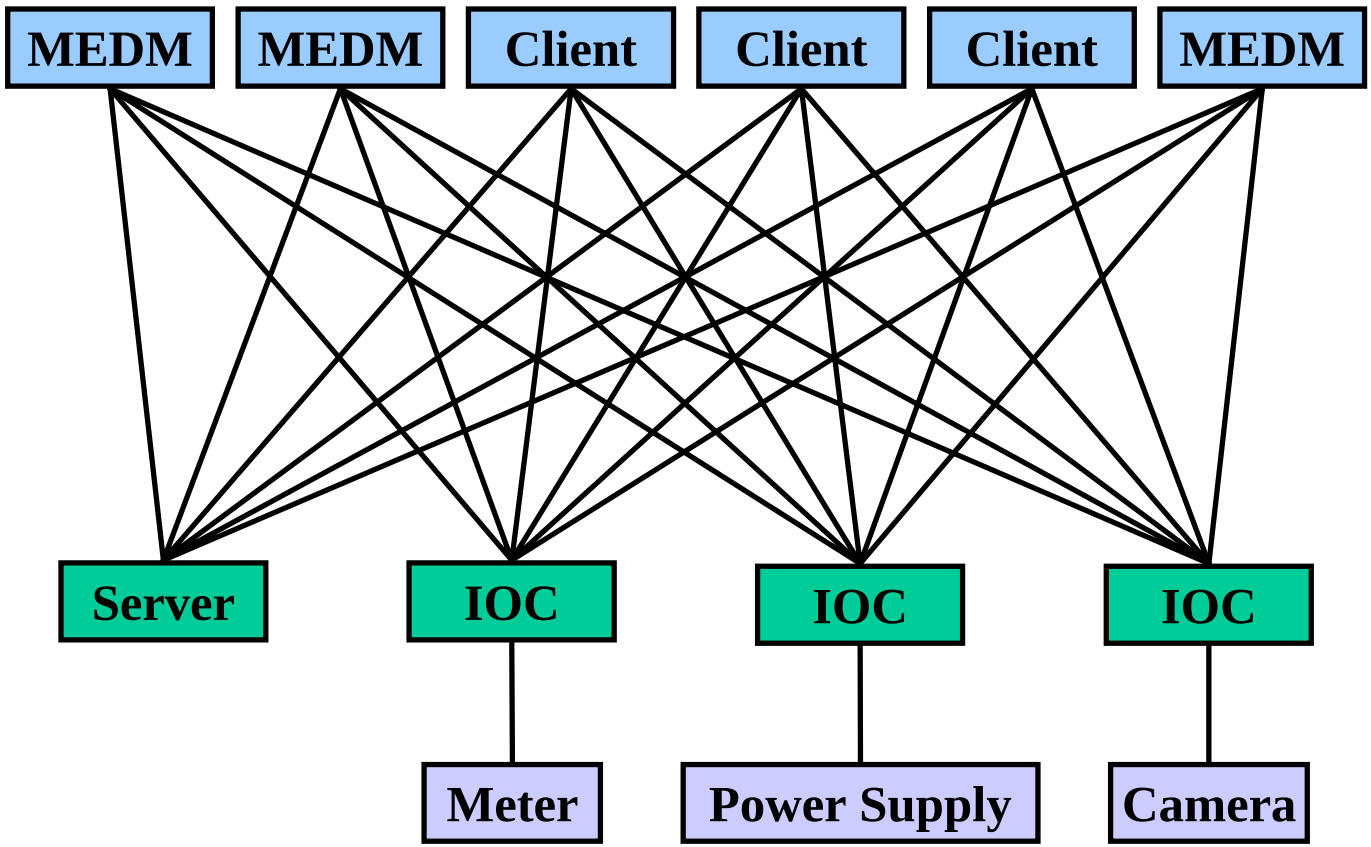
What is the Gateway ?

- **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

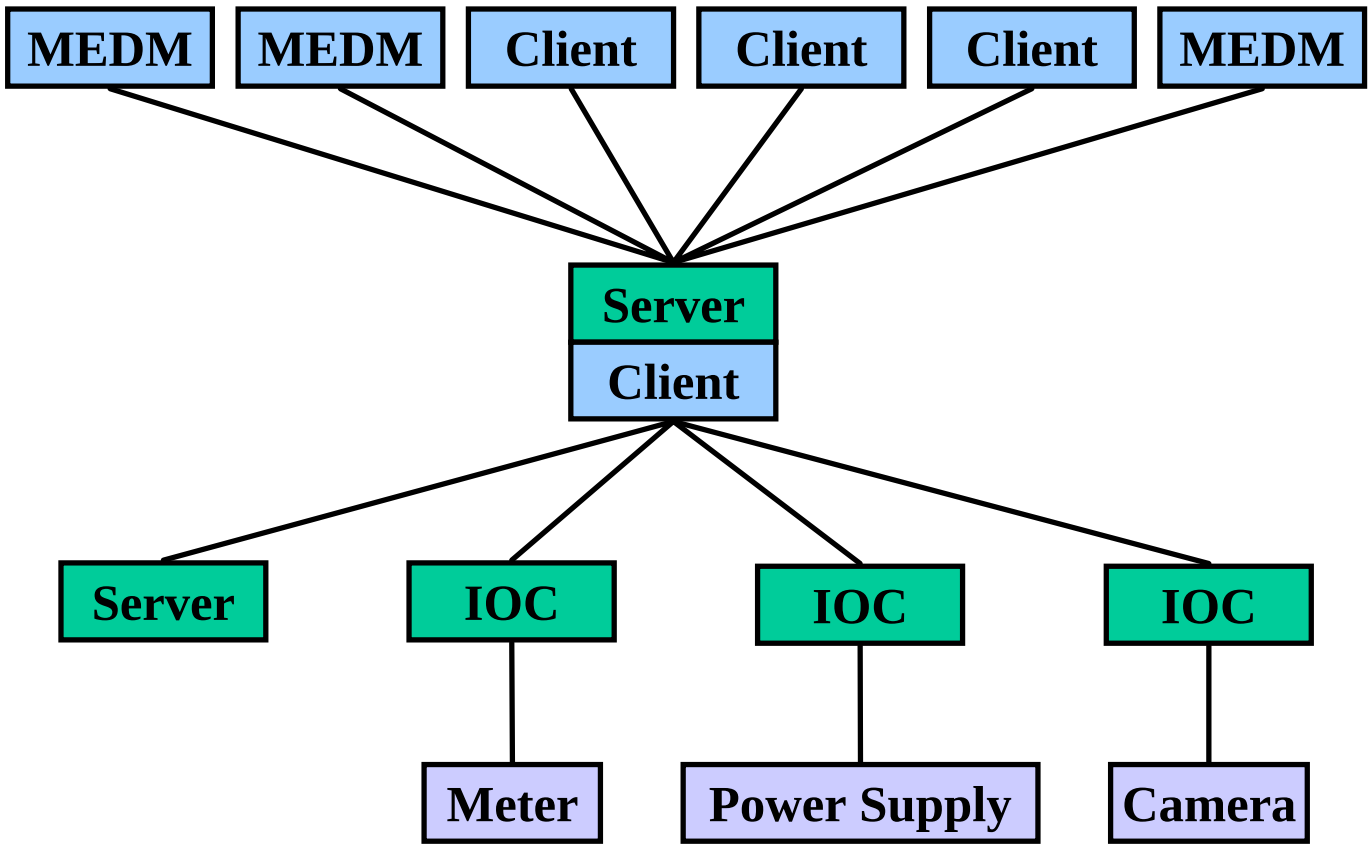


- **Allows many clients to access a process variable while making only one connection to the remote server**
  - Reduces the load on critical IOCs or other servers
- **Provides access from one subnet to another**
  - For example, from an office subnet to a machine subnet
- **Provides extensive additional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

EPICS Overview



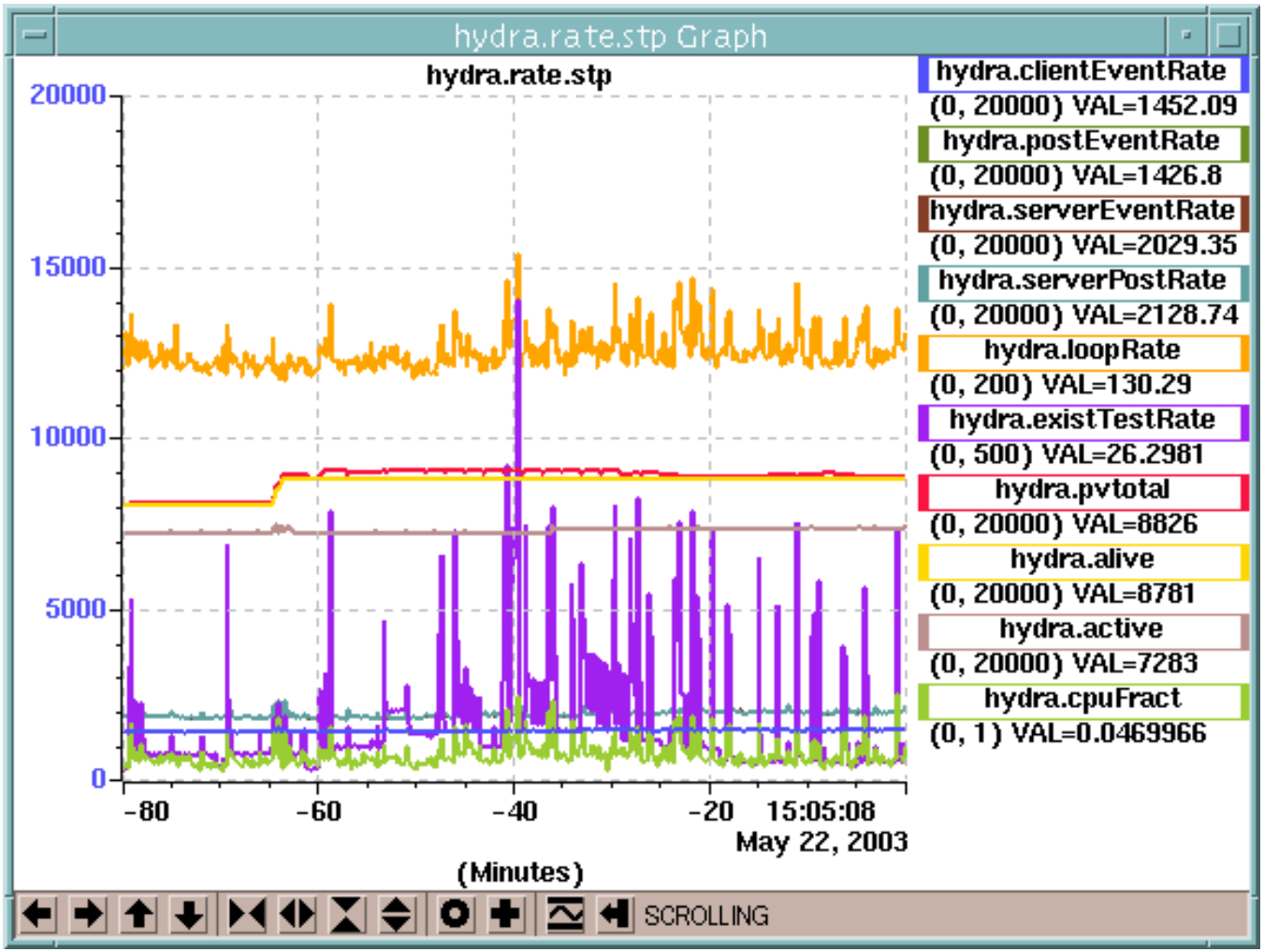
Gateway


MEDM
MEDM
Client
Client
Client
MEDM
Server
Client
Server
IOC
IOC
IOC
Meter
Power Supply
Camera

New Features in Gateway 2.0

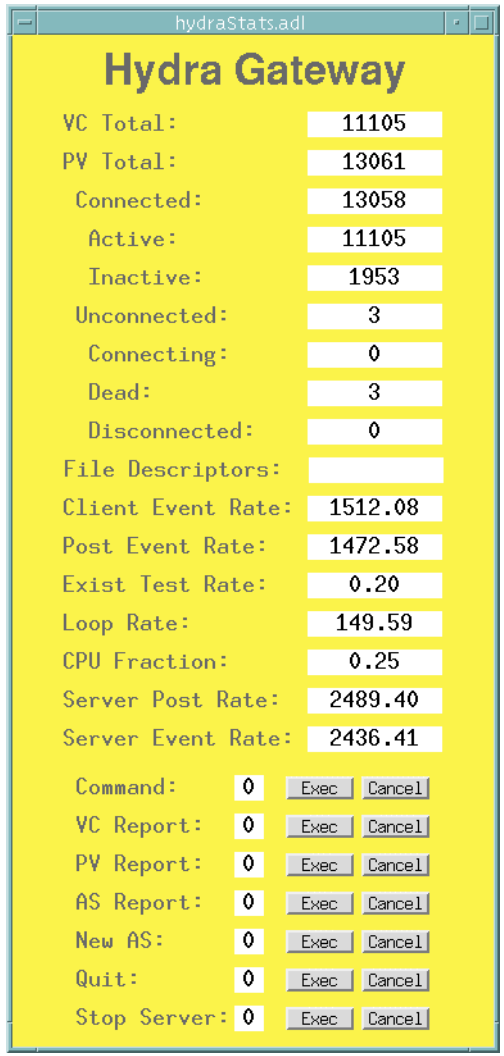
- **Does not require a specially modified version of base**
  - Does require 3.14 base
  - Needs 3.14.5 (preferably 3.14.6) or later to work right
- **Significant performance improvement**
  - 5 - 10 times less CPU usage
- **Very stable**
- **Runs on Solaris, Linux, and Windows**
- **Extensive diagnostics 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)

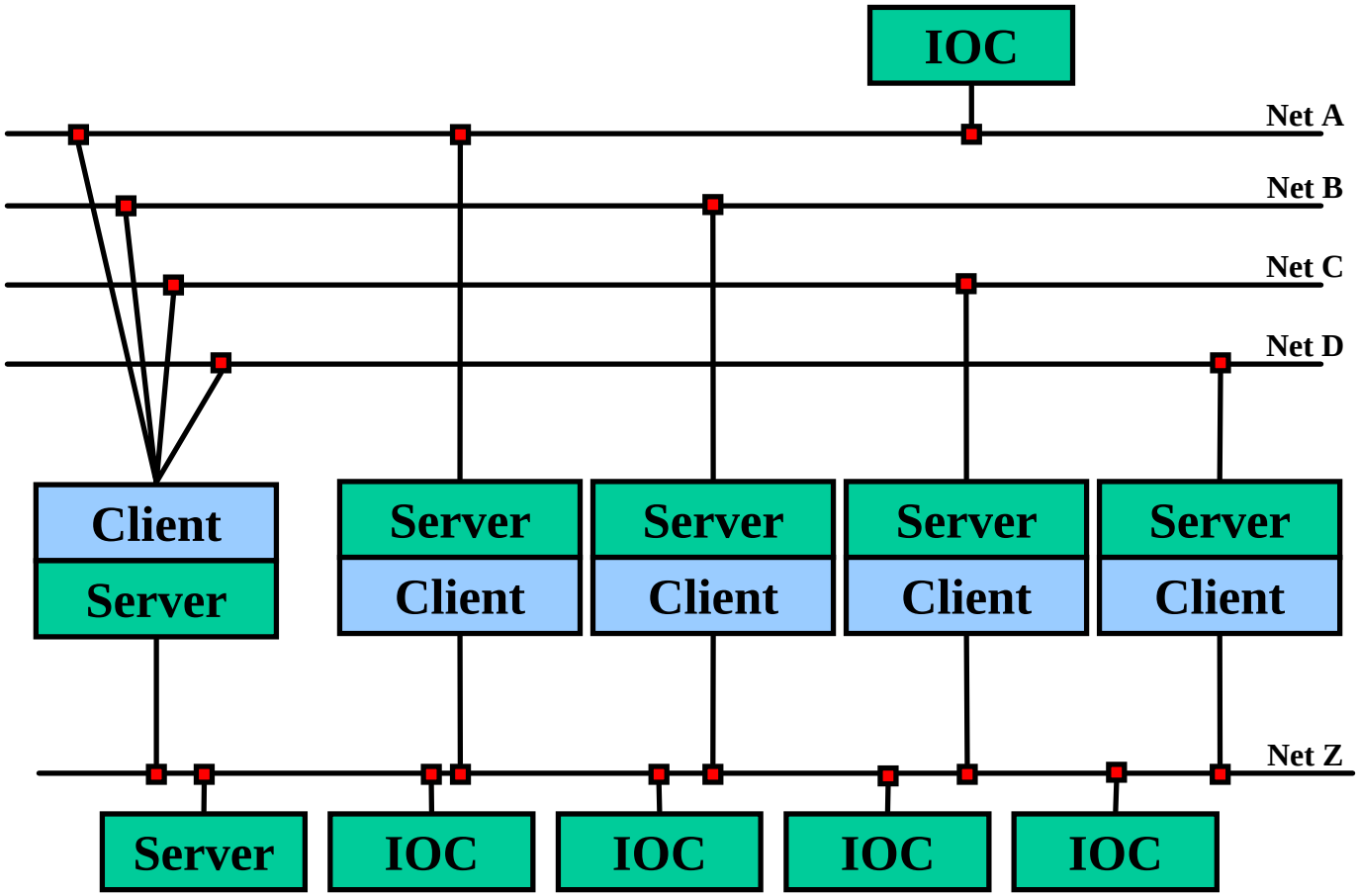


The APS Uses Gateways Extensively

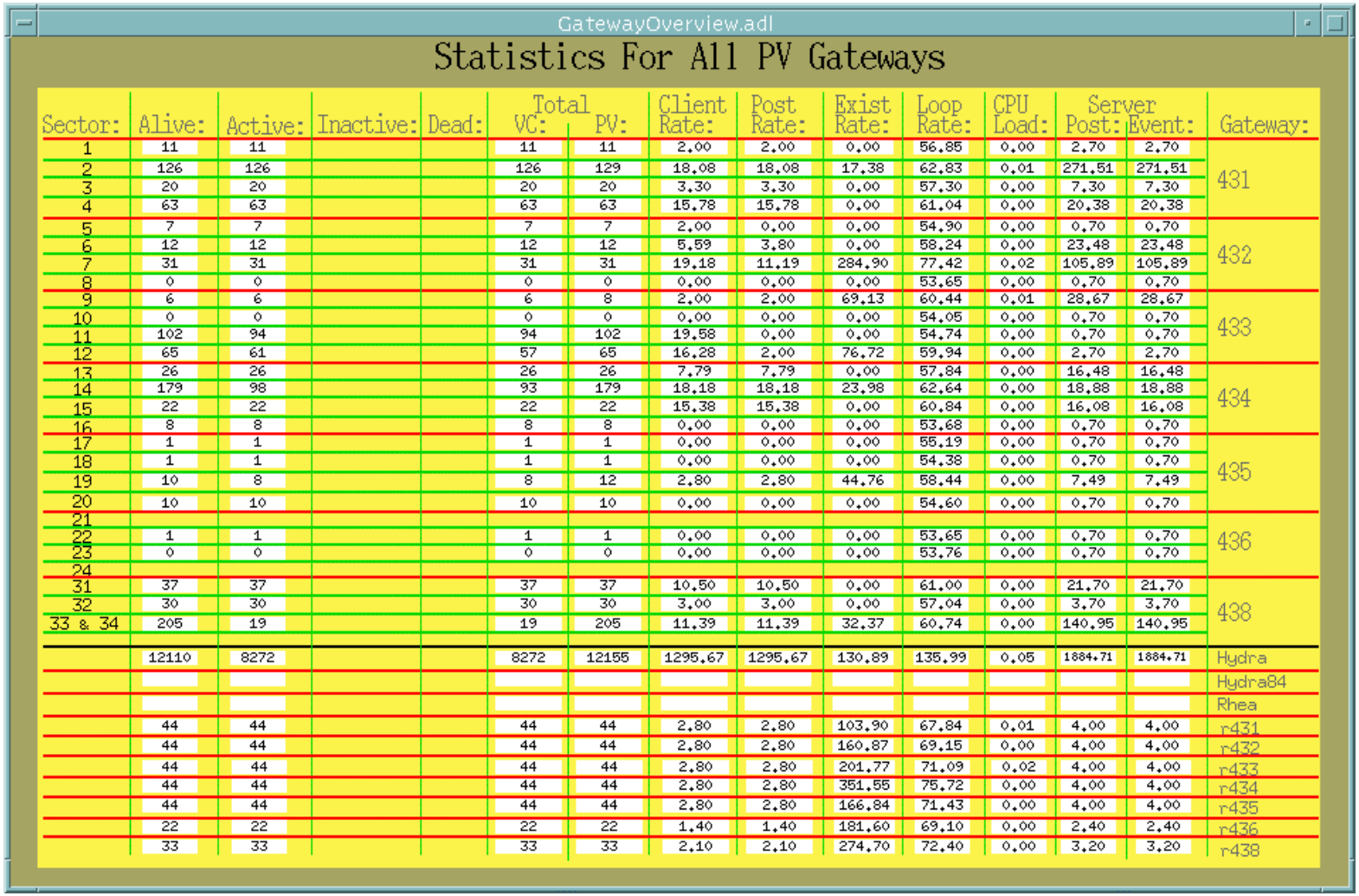
- **2 main Gateways to provide access to offices and floor coordinators**
- **29 Remote Gateways that provide access for experimental teams to their own systems and to the main control system**
- **9 Reverse Gateways to provide access to the internal process variables of the remote Gateways**
- **1 Alias 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

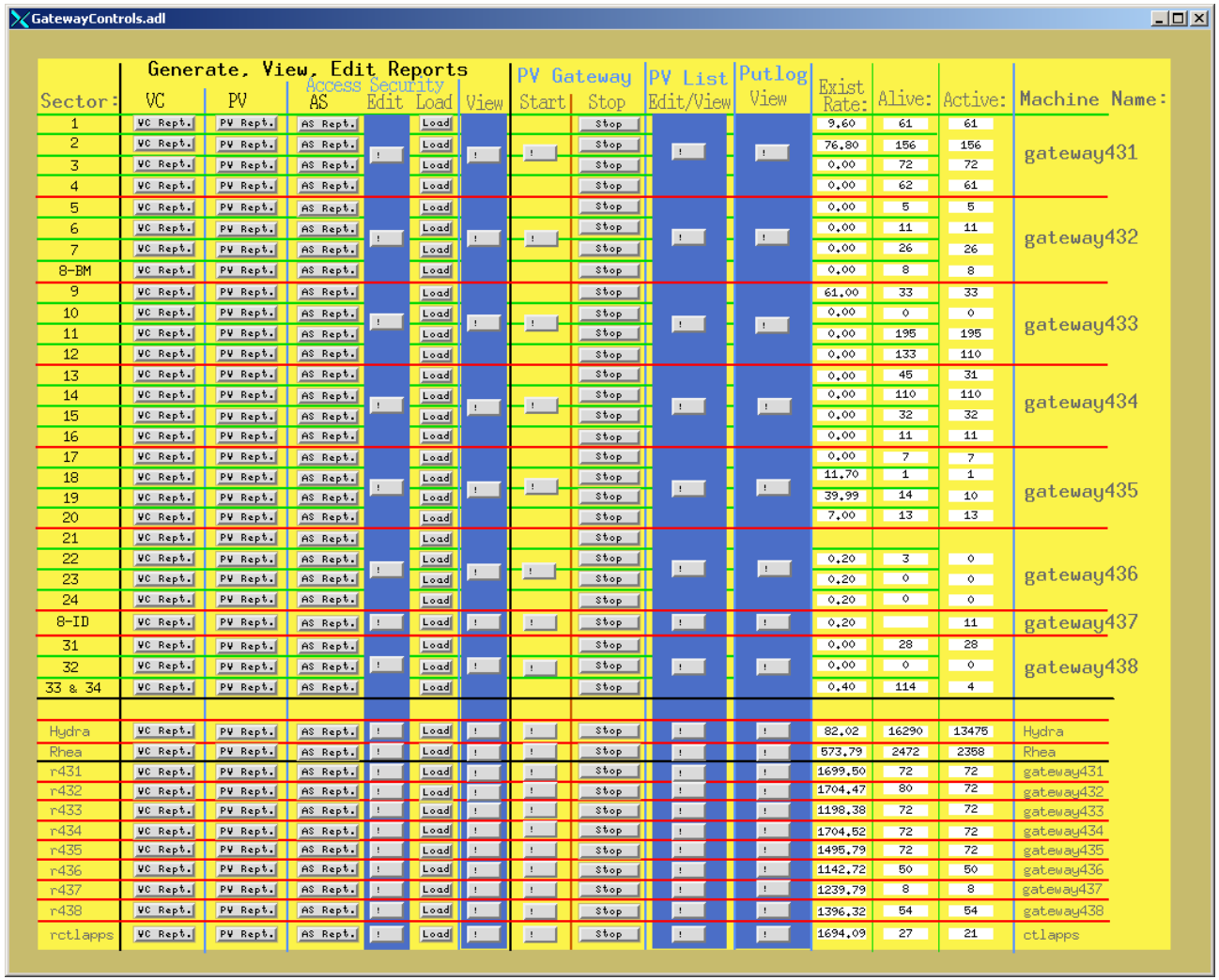


MEDM Status Screen for APS Gateways



Sector:	Alive:	Active:	Inactive:	Dead:	Total VC:	Total PV:	Client Rate:	Post Rate:	Exist Rate:	Loop Rate:	CPU Load:	Server Post:	Server Event:	Gateway:
1	11	11			11	11	2.00	2.00	0.00	56.85	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	433
11	102	94			94	102	19.58	0.00	0.00	54.74	0.00	0.70	0.70	
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	
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	435
19	10	8			8	12	2.80	2.80	44.76	58.44	0.00	7.49	7.49	
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
														Hydra84
														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



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