TABLE I
DIRECTORY CONTROLLER'S EXTENDED MESI PROTOCOL.

	REQUESTS				DMA REQUESTS		
	GetM	**PutS**	**PutM**	**Evict**	**Read**	**Write**	**Inv-Ack**
	read mem, Data to req, owner = req / M	Put-Ack to req	Put-Ack to req		read mem, Data to req / V	[read mem], write LLC, / V	
	Data to req, owner = req / M	Put-Ack to req	Put-Ack to req	[write mem] / I	Data to req	write LLC	[write mem] / I
	Data to req, Inval. to sharers, owner = req, clear sharers / M	Put-Ack to req, sharers -= req / V (if last sharer)	Put-Ack to req, sharers -= req / V (if last sharer)	[write mem], Inval. to sharers, clear sharers / I			
	Fwd-GetM to owner, owner = req / M	Put-Ack to req, if req is owner: - clear owner / V	write LLC, Put-Ack to req, if req is owner: - clear owner / V	Fwd-GetM to owner, clear owner / E|D			
	Fwd-GetM to owner, owner = req	Put-Ack to req, if req is owner, clear owner / V	write LLC, Put-Ack to req, if req is owner, clear owner / M|D	Fwd-GetM to owner, clear owner / M|D			
	stall	Put-Ack to req, sharers -= req	Put-Ack to req, sharers -= req	stall			
	stall	Put-Ack to req, sharers - = req	Put-Ack to req, sharers - = req	stall			
	stall	Put-Ack to req, sharers -= req	Put-Ack to req, sharers -= req				[write mem] / I