

Issue 1

# Fujitsu OpenVME costs compared to IBM mainframe costs

*Independent Analyst Report by:*

*Barry J Graham, Smart Computing and Xephon Plc*

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*Over a 5 year period Fujitsu's Trimetra® NOVA typically costs a third less than a comparable IBM® mainframe.*

*This report compares the five year hardware, software and maintenance costs of typical Fujitsu and IBM mainframe systems at the beginning of 2002.*

*The figures for the Fujitsu systems are the typical list prices provided by Fujitsu, whilst the figures for the IBM systems are the average price being paid by IBM users as published in the Xephon Mainframe Market Monitor. This publication has been detailing the costs of IBM mainframe systems for over ten years since IBM ceased to publish list prices and provides average IBM prices calculated from literally hundreds of 'real' sales.*

To make such a comparison it is necessary to be sure that we are comparing like with like as in the mainframe world not all MIPS (or even Gigabytes) are equal. For example, an earlier extensive Xephon study into the relative performance of IBM and Fujitsu systems concluded that each OpenVME MIP delivered at least twice the useful work of an IBM MIP, and the total DASD requirement of a Fujitsu system was also around 20% lower.

The difference in the useful work performed per MIPS was a combination of the OpenVME systems supporting 50% more online users per MIPS and the ability to both scale more linearly and run effectively at higher utilisation levels. In my view, from recent work in customer situations, this has not changed.

In line with the above, the comparisons here take one IBM MSU to be equal to 2.5 to 3 OpenVME MIPS (1 IBM MSU is roughly equal to 5-6 IBM MIPS) and use the average of 2.75 in the calculations.

The next problem is that with large 'gaps' between models it is not possible to find an exact IBM processor match for processors in the OpenVME range. Therefore, in some cases the systems compared are slightly more powerful and in others slightly less powerful. To 'smooth'

out some of this discrepancy the comparison looks at a price/performance comparison as well as just a price comparison. The price/performance relationship being the Fujitsu cost as a percentage of the IBM cost for equal performance at a given capacity level.

The processor/peripherals figure is the purchase cost of the total system including processor, DASD, tapes and communications controllers. The software cost is the five year software cost (typical products used from both manufacturer's and third party vendors but not applications packages) at today's prices. Obviously, this is subject to change as the IBM cost in particular is based upon a monthly payment that can be increased at any time during the five years.

The five year maintenance cost is based upon typical UK pricing and will vary in other countries. In the IBM case this figure may be lower in some cases where IBM 'bundles' in long periods of maintenance (sometimes called warranty). However, the processor/peripherals purchase price is likely to be higher in these cases making the net effect neutral.

Finally, the five year software support cost reflects IBM's move towards charging for services in this area. This figure is likely to vary more than any of the other figures.

# Cost Comparison

The table below illustrates that when comparing like for like systems, Fujitsu has a consistent price/performance advantage, being about 33% below the IBM cost in all cases except the NOVA 245 compared to the IBM Z103 where the advantage reduces to 23%. However, this latter situation is mainly due to the Z103 being substantially larger and therefore benefiting from the economies of scale designed into the IBM software pricing model. A larger NOVA system would therefore once again show an increased price/performance advantage at this level, closer to the 33% seen in the other comparisons.

**In summary, it would appear that over a five year period a Fujitsu system would typically cost one third less than a comparable IBM system today.**

It is interesting to compare the results of this relative cost comparison with the one I completed during late 1995 which showed the Fujitsu costs to be 18% lower overall. I said at the time that with software costs about to overtake hardware costs in most users budgets for the first time, and also likely to be the fastest growing element of computing costs into the future, Fujitsu looked well set to improve their advantage into the future. This was due to two main differences between the two vendors at that time. Firstly, Fujitsu priced the hardware at higher levels than IBM but conversely priced the software much lower. Secondly, Fujitsu included more of

the required software products within its operating system whereas IBM users typically have to add products from third party vendors.

My prediction at that time was that if hardware costs were to reduce at 15% per annum, people, and maintenance costs increase at 5% per annum and software costs increase at 15% per annum, then the overall Fujitsu cost advantage would be 23% by 1998.

Since that time the software costs have increased and the hardware costs decreased in line with the predictions and the two main differences have also remained unchanged. The Fujitsu cost advantage has consequently improved from the 18% noted in 1995, beyond the 23% estimated for 1998 to the 33% noted today.

Another issue which impacts the five year costs is the actual life of the hardware products. When the user does not grow then this may not be important as all hardware sold today will last for five years. But when a user grows and needs more capacity they will not want to upgrade to what is in effect an obsolete system if the initial equipment has been superseded by the vendor. This is significant for a growing IBM user as for example, over the past five years IBM has shipped four different CMOS product ranges (G4, G5, G6 and Z series). As a result, few users who purchased a G4 in 1997 or 1998 would still be on that range. This means that the investment in

IBM processor technology is typically no more than a three year one. With regard to IBM DASD the situation is the same, and I know of no users who still have 1997 IBM DASD installed today - so again a typical three year investment period.

The longer life of a Fujitsu system and DASD therefore provides an advantage to the Fujitsu user which dramatically impacts the hardware cost comparison over five years for growing users. From my calculations, the IBM processor and peripherals costs would actually increase by 40% over a five year period due to this shorter product life. The second example includes this 40% increase and shows that as a result over a five year period, for a growing account, a Fujitsu system would typically cost 38% less than a comparable IBM system today.

The only other major cost difference between Fujitsu and IBM systems is that Fujitsu users typically incur lower people costs in the operations and systems support area as a result of the greater integration of the OpenVME software products and less frequent software upgrades. I would estimate the savings in this area to be from £50-100,000 per year at the NOVA 64 level up to around £100-200,000 for a NOVA 245 user.

The fact that the Fujitsu cost advantage improved from 18% to 23% from 1995 to 1998 and then from 23% to

38% (for growing users) in the past three years indicates that the gap is continuing to widen, and at an accelerating rate. This is no surprise since the disappearance of IBM's Plug Compatible processor competition in 2001 they have effectively halted the price decline of their processors. Meanwhile, they have increased maintenance prices and increased the cost of software support. At the same time they have introduced higher processor prices at the low end of their latest processor range which is the market segment in which Fujitsu mainly operates.

With all direct plug compatible processor competition now eliminated, slower processor price reductions, increased maintenance charges and increased software support costs from IBM, and an increased discrepancy between their low end and high end processors pricing is expected to continue for the foreseeable future. To this list will soon be added increased software charges as IBM is currently attacking its third party software competitors and success in this action will lead to higher software charges from IBM. Consequently, if Fujitsu continues to reduce processor prices in line with the technology improvements expected over the next few years and reduces software and maintenance costs per unit of capacity, as they have done to date, the cost gap illustrated here is certain to increase still further over the next few years.

## IBM costs compared to Fujitsu costs in non growth scenario

5 Year Costs	IBM 9672 RB6	NOVA 64	IBM 2064 Z101	NOVA 125	IBM 2064 Z102	NOVA 245	IBM 2064 Z103	NOVA 245
	28 MSU's 77 MIPS	64 MIPS	41 MSU's 113 MIPS	125 MIPS	78 MSU's 215 MIPS	245 MIPS	112 MSU's 308 MIPS	245 MIPS
Processor/peripherals	£750,000	£1,400,000	£1,100,000	£2,748,000	£2,000,000	£5,042,000	£2,900,000	£5,042,000
Software	£4,200,000	£1,432,000	£5,400,000	£2,484,000	£7,560,000	£2,660,000	£9,000,000	£2,660,000
5 years maintenance	£300,000	£286,000	£444,000	£480,000	£800,000	£930,000	£1,160,000	£930,000
5 years software support	£400,000		£810,000		£1,000,000		£1,100,000	
<b>Total</b>	<b>£5,650,000</b>	<b>£3,118,000</b>	<b>£7,754,000</b>	<b>£5,712,000</b>	<b>£11,360,000</b>	<b>£8,632,000</b>	<b>£14,160,000</b>	<b>£8,632,000</b>
Fujitsu cost as % of IBM cost		55%		70%		76%		61%
Fujitsu performance as % of IBM		83%		111%		114%		80%
<b>Price/performance</b>		<b>66%</b>		<b>66%</b>		<b>67%</b>		<b>77%</b>

## IBM costs compared to Fujitsu costs for growing user

5 Year Costs	IBM 9672 RB6	NOVA 64	IBM 2064 Z101	NOVA 125	IBM 2064 Z102	NOVA 245	IBM 2064 Z103	NOVA 245
	28 MSU's 77 MIPS	64 MIPS	41 MSU's 113 MIPS	125 MIPS	78 MSU's 215 MIPS	245 MIPS	112 MSU's 308 MIPS	245 MIPS
Processor/peripherals	£1,050,000	£1,400,000	£1,540,000	£2,748,000	£2,800,000	£5,042,000	£2,900,000	£5,042,000
Software	£4,200,000	£1,432,000	£5,400,000	£2,484,000	£7,560,000	£2,660,000	£9,000,000	£2,660,000
5 years maintenance	£300,000	£286,000	£444,000	£480,000	£800,000	£930,000	£1,160,000	£930,000
5 years software support	£400,000		£810,000		£1,000,000		£1,100,000	
<b>Total</b>	<b>£5,950,000</b>	<b>£3,118,000</b>	<b>£8,194,000</b>	<b>£5,712,000</b>	<b>£12,160,000</b>	<b>£8,632,000</b>	<b>£15,320,000</b>	<b>£8,632,000</b>
Fujitsu cost as % of IBM cost		55%		70%		71%		56%
Fujitsu performance as % of IBM		83%		111%		114%		80%
<b>Price/performance</b>		<b>63%</b>		<b>63%</b>		<b>62%</b>		<b>71%</b>

# Conclusion

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My advice to users in this situation is to ignore the most visible and well publicised hardware costs when making any mainframe computer acquisition and look at the true five year cost of ownership. This is because over five years the hardware purchase price represents just 13% to 20% of the 'non people' costs and well under 10% of the total costs. As such, even an apparently large advantage can soon be negated by the other factors involved in the long term cost of ownership - as has been clearly illustrated in this report.

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## FUJITSU SERVICES

Telephone: +44 (0) 870 242 7998

Facsimile: +44 (0) 870 242 4445

E-mail: [askfujitsu@services.fujitsu.com](mailto:askfujitsu@services.fujitsu.com)

Web: [services.fujitsu.com](http://services.fujitsu.com)

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