

# J90 Customer-Ready Installations

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**ABSTRACT:** *This paper describes Cray's recent and planned efforts to reduce the time and complexity involved with installing a J90 system. By preloading and configuring UNICOS and other software products at the factory, Cray can deliver a system that is usable by the customer almost as soon as the hardware is up and running.*

## Introduction

With the introduction of the J90 series computer system in 1995, Cray recognized both the opportunity and need to reduce on-site installation time and cost. By delivering a system that is "Customer Ready" when it arrives at the customer site, time-saving benefits are realized by both the Cray installation team and the end customer. This paper describes a basic model for delivering customer ready computer systems, first by comparison with Cray's traditional model of on-site installation of hardware and software, and then explains the current and planned implementation of Customer Ready installation procedures for the J90 system.

## Installation Models

### *Traditional Model*

Historically Cray has performed only hardware checkout at the factory. When systems are shipped to the customer site, no software is preloaded at the factory. Cray's on-site installation team begins with performing hardware installation, configuration and checkout before turning the system over to the software installation effort. The software installation begins with loading all software products from tape or CD, followed by a full build of each software product. Numerous configuration scripts must be run and parameters set in order to get basic system support functions running, after which further configuration, network setup and system customization can be completed. At a minimum, the entire on-site installation effort requires from several days to over one week of dedicated time by a crew of Cray engineers and analysts.

### *Customer Ready Model*

Systems that are Customer Ready would leave the factory with all Cray-supplied software pre-installed and configured. All software products would be preloaded, built and installed

with a default configuration as part of the integrated system checkout prior to delivery to the customer site. Once the Cray installation team completes the hardware installation on-site, a quick system verification would be the last step in making the system ready to be turned over for initial customer usage. With minimal time and effort needed to complete the hardware and software installation, the Cray on-site team would then be positioned to devote its time to helping the customer with additional startup activities, such as further customization of the filesystems, tuning the system for the customer's workload, storage management procedure setup, and other tasks associated with the specific local environment.

### *Intermediate Model*

Cray's Customer Ready installation strategy is to strive for progressively reducing the time required to complete the on-site installation of the system and to simplify the job of getting basic system functions operational. This begins with preloading software products at the factory and shipping systems with an initial configuration and filesystem that will come up easily once the hardware installation is completed on-site. Under this model, the Cray installation team benefits from having much of the time-consuming software load and build activities already done before the system arrives on-site. This in turn allows the Cray installation analyst to spend relatively more time working with the customer on configuration and startup activities that have direct value to the customer.

## Targeting the J90 Platform

Cray expected to deliver and install over 200 J90 systems in the first year of production during 1995. This represented the highest volume ever for Cray with a new product in its first year, or for any single product type. Cray's Customer Service organization chose to target the J90 for installation cost reduction for the following reasons:

- J90 installations are not supported on-site by Cray's System Test and Checkout (STCO) group from the Manufacturing

division. In the past, and with current larger Cray systems, STCO provides on-site installation support in many instances due to the complexity and resource requirements associated with installing the hardware. With the J90, Cray has eliminated the need for STCO support on-site to install the hardware.

- A high percentage of Cray’s J90 customers are choosing not to contract for dedicated on-site service for their new system. Thus, the installation of the J90 system is done by an individual or team of Customer Service engineers and analysts who must travel to the site. With such a high number of systems being installed in this mode, it is imperative that Cray control its costs by minimizing the overall time, effort and number of people required to perform the on-site installation of the system.
- Many J90 systems are going to customers who are new to Cray and will not carry over to the J90 an existing unix environment. The operational configuration, file system setup and system tuning parameters will be newly created. The customer will in many cases not have these factors pre-defined at the time of system installation, but rather will want the system to “plug and play.”

The implementation of an initial set of Customer Ready procedures on the J90 has resulted in benefits to both the Cray installation team and customer. The quality of system checkout and setup that is done at the factory prior to shipping each J90 to the customer has yielded significant time savings in completing the on-site installation, as illustrated by the 1995 installation results data below. This savings has in turn enabled the Cray installation analyst to concentrate efforts on working directly with the customer to complete the customization of the system configuration into the customer network environment, and ultimately results in getting end users onto the system very quickly.

### 1995 J90 Installation Results

For the past several years, Cray’s Customer Service organization has been working toward ongoing improvements in the time and cost associated with new system installations. A measure of defects per installation is tracked, and average defect rates are calculated for all systems as well as for each system type. By the end of 1995, Cray had installed 217 J90 systems for which installation data was collected. The information in Table 1 shows the average time taken (in wall clock hours) to install the J90 hardware and software, and the average number of defects per installation. These results are shown for all 217 systems, and for the 65 systems that were installed in the last thirteen weeks of 1995. The trends for all of these measures improved for the final thirteen weeks. These strong results reflect the attention paid to integrated system checkout at the factory, which resulted in smooth on-site installations with very few problems encountered.

Table 1. 1995 J90 Installations

	Total	Last 13 Wks.
System Installs	217	65
Install Time (hours)		
Hardware	3.3	2.7
Software	10.2	7.8
Install Defects		
Average	1.1	0.5

### Current J90 Customer Ready Procedures

The steps currently being taken at the factory to aid in delivering Customer Ready J90 systems include the following:

- The current released version of UNICOS and the Cray compilers that are ordered by the customer are preloaded and installed on the system
- A default filesystem layout and system configuration are put in place
- The final stage of system checkout is completed with the software and configuration in place, to insure that the complete system being shipped to the customer has been verified in the ordered configuration before arrival at the customer site
- A number of key system support functions are enabled through setup scripts that are run at the factory, which allows the Cray installation analyst to use these functions on-site immediately upon completion of the hardware installation. The support functions that are ready to run include:
  - the ability to run on-line diagnostics and make a remote support connection to a Cray service center
  - operator-initiated tape job capabilities
  - a default NQS configuration allowing job submission
  - a basic file dump and restore capability

The Cray installation analyst on-site can bring up a functional UNICOS environment right away with these items in place as delivered from the factory. Further time may be required to install additional software, create customer filesystems and fine-tune the overall system configuration, but with many of the basics out of the way this time on-site can be spent working with the customer on customizing the environment. In this way, the Customer Ready procedures that are currently in place provide benefits to both the Cray installation analyst and the customer.

### Future Enhancements

Many Cray field analysts have become experienced with the current J90 installation procedures, and have installed several J90 systems in their respective service regions. Feedback from these analysts is being incorporated into further enhancements to the J90 Customer Ready procedures in 1996. Some specific changes that are under consideration include:

- Installation of all Cray software ordered by the customer

- Improving the default system configuration settings
- Applying customer-defined configuration parameters during the factory installation

Delivering a strong default system configuration is important in aiding many of Cray's new customers in getting started with a standard configuration that requires little or no customer experience in unix system administration. The option to apply a customer-defined configuration at the factory may be an attractive option for some of Cray's existing customers who plan to migrate an existing UNICOS environment over to a new J90 system. Cray hopes to gain additional experience in satisfying

both of these types of customer situations through implementation of new J90 Customer Ready procedures in 1996.

## **Summary**

With the introduction of the J90, Cray has begun taking steps toward a Customer Ready system installation model. Now that well over 200 J90 systems have been delivered to customers, the results of these efforts have been very strong in terms of achieving fast and error-free installations. A significant factor in this accomplishment has been the installation and checkout of system software at the factory. Additional J90 Customer Ready enhancements are being implemented in 1996, to further ease the on-site effort involved in system setup and configuration.